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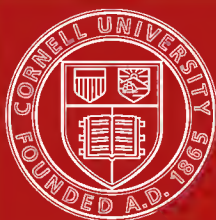
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DICTIONARY OF  
SCIENTIFIC ILLUSTRATIONS  
AND SYMBOLS

MORAL TRUTHS MIRRORED IN  
SCIENTIFIC FACTS

**Designed for the Use of the Senate, the Bar, the Pulpit  
the Orator, and the Lover of Nature**

BY

A BARRISTER OF THE HONORABLE SOCIETY  
OF THE INNER TEMPLE



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WILBUR B. KETCHAM  
2 COOPER UNION

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## PREFACE AND GUIDE.

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THIS book is an assemblage of striking and interesting scientific facts, arranged so as to be of immediate use to men who require a suggestive topic, a forcible analogy, a cogent symbol, or a suitable illustration.

It may also be pleasant reading to busy lovers of Nature who are glad to spare half-hours from time to time in contemplating the marvels of Creation.

Anecdotes have long been used to illustrate moral truth ; but scientific facts are often preferable. Clergymen are finding out that their hearers are somewhat tired of such of the former as are drawn chiefly from the sentimental side of life, and do not rest upon reliable historical foundation.

Scientific facts, being revelations of Nature herself, are not open to cavil. Nature is a parable ; and if we listen with reverent, loving ears, and look with sincere, eager eyes where she invites us, we receive eternal truths. Every pond and every star has its distinctive lesson ready for the man who will learn it. Professor H. Drummond, in his suggestive work, speaks of "natural law in the spiritual world." From my point of view these terms should be reversed. Spiritual law is the one and only law. The universe is merely the mirror thereof.

As regards the mechanical arrangement of the present volume, it is such as should render rapid reference to every part quite easy. All kindred topics are grouped throughout its pages together. Besides this, there is at page 401 an alphabetical index of all the general topics ; and on page 410 an index of natural objects, technical terms, places, things, and creatures.

In the third place, there is also a list of the books from which various important facts have been culled, and an explanation of those abbreviations which are used throughout these pages to indicate the respective responsible authorities.

It is to be distinctly understood that no author whom I have quoted is ever responsible for any illustration, symbol, analogy, deduction, inference, or comment which I have anywhere made. The references, which for convenience are placed at the end of the topics, leave all such responsibility with me, and only indicate the source whence the facts are derived.

In every instance—except that of merely common knowledge—I designate by the abbreviation the name of some authority to whom I am indebted for my information, and who may be regarded as eminently trustworthy. Wherever it has seemed necessary I have given his very words. I thought it better to do so than to curtail them; because, while it is unnecessary that any application of a particular fact should be more than a few hints, it certainly is requisite, in an important instance, that the fact itself should be stated with precision by the most competent person, so that any speaker who uses it may be thereby made master of his subject.

With a view to condensation I have, whenever possible, compressed the moral application of my facts into the denoting headings of the paragraphs.

# DICTIONARY

OF

## SCIENTIFIC ILLUSTRATIONS AND SYMBOLS.

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**Abjectness Caused by Dependency.**—A condition of long dependence upon the help of others will always reduce men to a state more or less abject. The effect of such dependence is also very obvious in the case of some animals, and notably in that of the sheep. With no one quality now to fit it for self-preservation, the sheep makes vain attempts at all. Without swiftness it endeavors to fly; and without strength sometimes offers to oppose. But these feeble attempts rather incite than repress the assaults of every enemy; and the dog follows the flock with greater delight upon seeing them fly, and attacks them with more fierceness upon their unsupported attempts at resistance. Indeed, they run together in flocks rather with the hopes of losing their single danger in the crowd, than of uniting to repress the attack by numbers. The sheep, therefore, were it exposed in its present state to struggle with its natural enemies of the forest, would soon be extirpated. Loaded with a heavy fleece, deprived of the defense of its horns, and rendered heavy, slow, and feeble, it can have no other safety than what it finds from man. Its long state of dependency has made it abject.

A.

**Aborigines, Extermination of.**—Englishmen are not the only creatures who are successful colonists. And the credit, if

any, of exterminating aborigines they are entitled to share with insects. Let us take the case of the Australian bee. The Australian bee is about the size of a fly, and without any sting; but the English bee has been so successfully introduced as to be now abundant in a wild state in the bush, spreading all over the Australian continent, and yielding large quantities of honey, which it deposits in the hollows of trees: the immense quantity of honey-yielding flowers, as *Xanthorrhœa*, *Eucalyptus*, *Banksia*, and a multitude of others, afford an abundant supply of material. The foreign bee is fast driving away the aboriginal insect as the European is exterminating the Black from the settled districts, so that the Australian bee is now very scarce. Does this illustrate the "survival of the fittest"? G.

**Absolute Rest and Motion.**—Motion and rest are either relative or absolute. By the relative motion or *rest* of a body we mean its change or permanence of position with respect to surrounding bodies; by its absolute motion or *rest* we mean the change or permanence of its position with respect to ideal fixed points in space. Thus a passenger in a railway-carriage may be in a state of relative rest with respect to the train in which he travels, but he is in a state of relative motion with respect to the objects (fields, houses, etc.) past which the train rushes. These houses, again, enjoy merely a state of relative rest, for the earth itself which bears them is in a state of incessant relative motion with respect to the celestial bodies of our solar system. In short, absolute motion and rest are unknown to us; in Nature relative motion and rest are alone presented to our observation. EL.

**Accidents, Nature's Governance of.**—The accident of the individual may be the design of Nature. We see this illustrated again and again in the lives of men and in the history of nations. In the forest we may clearly observe Nature's governance of accidents. Many noble oaks have been planted by the squirrel, who unconsciously yields no inconsiderable boon to the domains he infests. Toward autumn this provident little animal mounts the branches of oak-trees, strips off the acorns, and



buries them in the earth, as a supply of food against the severities of winter. He is most probably not gifted with a memory of sufficient retention to enable him to find every one he secretes, which are thus left in the ground, and springing up the following year, together with others which he accidentally drops, finally grow into magnificent trees. The nut-hatch in an indirect manner also frequently becomes a planter. Having twisted off their boughs a cluster of beech-nuts, this curious bird resorts to some favorite tree, whose bole is uneven, and endeavors, by a series of manœuvres, to get it into one of the crevices of the bark. During the operation it oftentimes falls accidentally to the ground, and is caused to germinate by the moisture of winter. Many small beeches are found growing near the haunts of the nut-hatch, which have evidently been planted in this accidental manner. Thus, without design on their part, the squirrel and the nut-hatch are most influential planters of the two finest trees of the forest. When we gaze with awe and admiration upon the grandest oak and the most splendid beech in the landscape, we may reflect that those two trees may actually owe their existence to two trifling accidents—the one being that of a bird with a nut, and the other being that of a squirrel with an acorn—which happened more than a century ago!

RO.

**Adaptation a Law of Nature.**—Nothing is more variable than the appearance of the stem in vegetables and trees. The form, size, and direction of the stem are beautifully adapted to the part which each plant has to take in the vast vegetable population which covers and adorns the globe. Plants which require to live in a pure and often renewed air have a straight stem, either robust or slender, according to their individual habit. Where they require a moist and denser atmosphere, when they have to creep along the ground, or to glide among the brambles, the stems are usually long, flexible, and trailing. If they have to float in the air, supporting themselves by plants of more robust growth, or to hang suspended from forest-trees in graceful festoons and light garlands, they are provided with

flexible, slender, and pliant stems, which enable them to embrace with their tendrils the trunks of trees or shrubs. Thus Nature fashions the outward forms of plants according to the part which they are intended to fill, and according to the functions which have been allotted to them. v.

**Adapting One's self, The Incapability of.**—Many interesting facts might be brought forward respecting the difficulty or facility which different animals have in accommodating themselves to varieties of temperature. It would appear that some animals, particularly those which inhabit the colder latitudes, enjoy a very limited range. Among these may be mentioned the reindeer, the Esquimau dog, and the Arctic or great white bear. All the Esquimau dogs brought to this country have perished. Arctic bears when imported suffer very much from the change of temperature, and, in order to keep them alive for any length of time, it is necessary to maintain a certain degree of artificial cold in the places where they are kept. Every attempt to introduce that beautiful and useful animal, the reindeer, into England or Scotland, has invariably failed, though in the latter country the moss, which constitutes the principal part of its food, grows in great abundance. On the other hand, it is equally curious that most animals brought hither from tropical climates die of some form of scrofula. For there is a law of limitation for animals and men. And the facts respecting the limited range enjoyed by some animals are not more noteworthy than are those respecting the limited range of some men. There are some persons who do well enough in the dull dreary region of a cold official life, whose existence is unendurable in the midst of the associations of wit and romance. The red-tape species die if brought away from the frigid regions of officialism and formality; and there are many poor men who live honest useful lives in the scenes of indigence, who, when fortune unexpectedly transports them into the luxurious scenes of opulence and gaiety, die from some one or other of the results of the change for which they were not constituted. Many attempts have been made to remove very good men from one

position into another, and the result has been a termination of their usefulness, and often of their life. The notion that men can adapt themselves to anything is an error arising from a want of observation. There is a sphere for every man; and, as a rule, the removal of him when he is fairly acclimatized either renders him useless altogether, or makes it necessary that he shall be sustained by artificial inventions, and in that case he cannot lead that natural life which is necessary to the full development of his powers. It will also be found that these difficulties in adapting men to great changes of position increase with their age. s.

**Admiration, The Love of.**—Man is an animal possessed of a powerful instinct to ornament himself, and to attract the attention of his fellows by various external decorations. This is a passion strong in every one of us: whether in the savage, who prides himself on his tattooing; or the New Zealand chief, who disfigures his face with linear incisions; or the Red Indian, who considers the ring in his nose as the symbol of nobility; or the military, arrayed in all the glories of feathers and gold lace; or the fine lady, in the fantastic creations of Parisian millinery. It is the love of admiration that gives the common impulse to all. This is the reason why the savage barter his gold for beads and ostrich-feathers, and why the soldier sheds his blood like water for an iron cross or a silver medal. It is this which makes the courtier sigh for a ribbon, or a star, or a garter; and the citizen gaze with admiration and awe at the cocked hat of the sheriff, and the gilded coach of the lord mayor. s.

**Adoration Premeditating the Destruction of its Object.**—Every reader of newspapers is familiar with the recurring incident of an inquest held over a person who has been killed by another, on the avowed ground that he had for the deceased a passionate adoration. The alliance between the deep feeling of adoration, or even passionate love, and the determination of the will to accomplish the destruction of the object which has called forth the feeling, is one of those paradoxes which, though forced on us, we cannot solve, unless, indeed, we accept as an

explanation that ready verdict of "insanity," which is an easy mode of shelving many metaphysical problems which are inconveniently baffling. But the fact is, even that would not account for the anomaly altogether in this case. Because there are people who systematically exhibit this anomaly as a settled principle of their procedure. We refer to the Samoiedes (or Samoyedes). They are scattered to the number of about a thousand families along the coasts of the Frozen Sea in the government of Archangel, and in Siberia in the governments of Tobolsk, and Torusk. They are heathens, worshipping the sun and moon, the water and the trees; but above all they adore the bear, to whom they pray. Yet they hunt him to death. Howbeit, before they enter upon any expedition against him, so intense is their adoration of him, that they religiously spend time in offering prayers and sacrifices to him. D.

**Adventurers, Our Professional.**—The sea-mews, terns, boobies, and cormorants live principally on fish which they catch for themselves. But the skuas (*Stercoraria*) incessantly pursue, harass, and beat these species until they have forced them to disgorge and drop their booty. Before the fish falls into the sea it is caught by the active persecutors. But these robbers are held in veneration in the Shetland Islands, and the care and protection of the sheep are almost entirely intrusted to them, owing to their possessing an inveterate hatred against eagles, for as soon as an eagle appears in view, three or four of them combine together to give him battle. They never attack him in front, but harass him pitilessly until his strength is so reduced that they can completely conquer him, or at least force him to retreat. Here we have what might have been intended as an allegory illustrative of "Our Professional Adventurers." The sea-mews, terns, boobies, and cormorants represent our bill-discounters, accountants, syndicate-mongers, and brokers. The skuas represent the lawyers who perpetually hunt, harass, and rob them of their earnings. These lawyers are not ostracized, but, on the contrary, are, like the skuas, encouraged; because they are supposed to protect a lamblike public from the pillage

of even greater rogues. Social skuas are deemed preferable to social eagles.

RE.

**Adversity, The Uniting Power of.**—Many people who are very quarrelsome in prosperity become very good friends when hostile circumstances throw them together. Many statesmen who quarrel desperately when they are in power become firm friends when they are combined together on the Opposition bench. So venomous and non-venomous snakes, when confined together, appear to live in good-fellowship; they are then generally seen mutually entwined in voluminous and intricate folds, and they have enjoyments in common, for they all drink water freely, and seem pleased when any is thrown over them. No doubt, restraint of liberty and metaphorical cold water are good things for pacifying all snake natures.

G.

**Aggressive Glory.**—One of the most terrible of insects is that which is appropriately called the driver-ant of Western Africa (*Anomma arcens*). They drive before them every living creature. There is not an animal that can withstand them. In their march they carry destruction before them, and every beast knows instinctively that it must not cross their track. They have been known to destroy even the agile monkey when their swarming host had once made a lodgment on its body. So completely is the dread of them in every living creature that on their approach whole villages are deserted. Fire will frighten almost any creature, but it has no terrors for the driver-ant, which will dash at a glowing coal, fix its jaws in the burning mass, and straightway shrivel up in the heat. Here is a noble model for aggressive military nations. When ants can be so courageous in the work of destruction, surely men should renew their zeal in that direction. Besides the *éclat* which must attach to them if they equal the driver-ants, there are ribbons and crosses and decorations awaiting them, and the plaudits of Christendom.

H.

**Aggressors, An Example for Human.**—It sometimes happens that the bees of an impoverished hive, impelled by hunger, make up their minds to attack and pillage a neighboring hive

which is well stocked with provisions. Réaumur relates a strange fact which, he says, he has often observed, and which proves that the bees do not fight to satisfy a sanguinary and savage instinct, but (which is less reprehensible) to satisfy their hunger. Bees attacked by a superior force are in no danger of losing their lives if their enemies can induce them to give up their throats—that expression conveys the idea. Supposing three or four are previously attacking one bee: they are pulling it by its legs, and biting it on its thorax. The unfortunate object of this attack has then nothing better to do, to escape alive from such a perilous situation, than to stretch out its trunk laden with sweet-scented honey. The plunderers will come one after the other and drink the honey; then, cloyed, satisfied, having nothing more to demand, they go their way, leaving the bee to return to its dwelling-place. In the latter part of their proceedings they set a good example to human aggressors who, when they rob their fellow-men of their property and country, are not content with taking that only which they absolutely require. If all human aggressors emulated the bee, and never attacked or sought to obtain the goods of others excepting when absolutely pressed by hunger, the villainy of the world would be very considerably diminished. 1.

**Aggressors, Fortune is Fickle to.**—The sea-eagles (*Pythargus*) are bold enough to attack even the seal. As they cannot lift him, they cling to his back and force him ashore by means of their wings. But having buried its claws deeply in its prey, it is often buried by its own audacity, for the large seals are sometimes strong enough to dive and drag their foe under water, where, being unable to disengage its talons, it is compelled to stay and meet a miserable death. Here, in the language of Horace, we have the pleasure of seeing “Fortune quitting the proud, and returning to the wretched.” The seal is one of the most harmless and intelligent of animals, and the attack made upon it by the rapacious aggression of the sea-eagle meets a fitting termination when that bold bird is dragged to its just doom under the sea. In many of our history tales, and

in most of our novels, we see a working out of this principle of proper retribution overtaking the wrong-doer. The interest very properly centers in the arrival of Nemesis to interview the guilty; and we all pray

“ May Fortune with returning smiles now bless  
Afflicted worth, and impious pride depress.”

RE.

**Analogues.**—The outline of a tree in full summer foliage may be seen represented in the outline of any one of its leaves; the uniform cellular tissue which composes the flat surface of the leaf being equivalent to the round irregular mass of the foliage. In fact, the green cells which clothe the veins of the leaf, and fill up all its interspaces, may be regarded as the analogues of the green leaves which clothe the branches of the tree; and although the leaf be in one plane, there are many trees, such as the beech, whose foliage, when looked at from a certain point of view, is also seen to be in one plane. Tall pyramidal trees have narrow leaves; as we see in the needles of the pine; while wide-spreading trees, on the other hand, have broad leaves, as may be observed in those of the elm or sycamore. In every case the correspondence between the shape of the individual leaf and the whole mass of the foliage is remarkably exact, even in the minutest particulars, and cannot fail to strike with wonder every one who notices it for the first time. Not only in trees, but in shrubs, grasses, and all herbaceous plants, we find the same typical correspondence between the leaf and the whole plant; we find the plant pattern repeated in the leaf pattern. Every individual plant furnishes a special illustration of it, and in some instances the resemblance is very extraordinary, placing it beyond doubt that it is intentional, and not accidental, design, and not mere coincidence. B.

**Ancestry, Reliance on.**—There are persons who seem to have nothing on which to base their claims to notice but the fact that they had noble ancestry, and they are never tired of informing you of that fact. There is every reason for likening them, as Sir T. Overbury did, to that useful esculent, the potato.

They make a show, and flourish ; but the best part of them, according to their own boasting, is, like the potato, buried and underground. NE.

**Anger, The Uses of.**—It might at first appear well for mankind if the bee were without its sting ; but upon recollection it will be found that the little animal would then have too many rivals in sharing its labors. A hundred other lazy animals, fond of honey and hating labor, would intrude upon the sweets of the hive, and the treasure would be carried off for want of armed guardians to protect it. And it might at first appear well for mankind if the principle of anger was not a part of our constitution. But then we should be overrun with rogues. The presence of anger, always ready to start forth when an injury is done or intended, has the effect of suppressing much gross impudence and intolerable oppression. The sting of noble anger applied to a dastard who has bullied the weak or injured the unoffending has a most salutary influence in restraining him for the future, and in warning his fraternity of the like punishment which is all ready for them. But man should control his anger as the bee does her sting. It is not to be perpetually projected on every possible occasion, but to be used only when impertinence, laziness, injustice, or fraud requires. A.

**Anger Manages Everything Badly.**—When the lion is irritated, he flogs his sides with his tail, and shakes his mane. If, therefore, a traveler finds himself unexpectedly in the presence of a lion, he may know the animal's intentions, and take precautions accordingly. If the tail does not move, the animal may be passed without fear ; but under the reverse circumstances no time must be lost in seeking a place of refuge, unless you are in a position to commence a contest with firearms, and then the more prompt and determined your action the more successful will be the issue. The fact is, that the lion by his anger deprives himself of a good opportunity of stealing a march upon you. He loses ground, and gives you vantage by his manifestation of it. It was an old maxim with Statius, that "Anger manages everything badly." In the transactions of



mankind undoubtedly he was right in this. It would seem from the conduct of the lion that the maxim may have some application even to animals. M.

**Animated Nature, The Common Bond of.**—When after a lengthened voyage and far from home, says Humboldt, we for the first time set foot in a tropical land, we are pleased to recognize in the rocks and mountain masses the same mineral species we have left behind—clay, slate, basaltic amygdaloid, and the like, the universal distribution of which seems to assure us that the old crust of the earth has been formed independently of the external influences of existing climes. But this well-known crust is covered with the forms of a foreign flora. Yet here, surrounded by unwonted vegetable forms, impressed with a sense of the overwhelming amount of the tropical organizing force, in presence of an exotic nature in all things, the native of the northern hemisphere has revealed to him the wonderful power of adaptation inherent in the human mind. We feel ourselves, in fact, akin to all that is organized; and though at first we may fancy that one of our native landscapes, with its appropriate features, like a native dialect, would present itself to us in more attractive colors, and rejoice us more than the foreign scene with its profusion of vegetable life, we nevertheless soon begin to find that we are burghers even under the shade of the palms of the torrid zone. In virtue of the mysterious connection of all organic forms (and occasionally the feeling of the necessity of this connection lies within us), these new exotic forms present themselves to our fancy as exalted and ennobled out of those which surrounded our childhood. Blind feeling, therefore, says the same great traveler, and the enchantment of the phenomena perceived by sense, in the same measure as reason and the combining faculty, lead us to the recognition, which now penetrates every grade of humanity, that a common bond, according to determinate laws, and therefore eternal, embraces the whole of animated nature. K.

**Annihilated, Nothing is.**—Denudation is the inseparable accompaniment of the production of all new strata of mechan-

ical origin. The formation of every new deposit by the transport of sediment and pebbles necessarily implies that there has been somewhere else a grinding down of rock into rounded fragments, sand, or mud, equal in quantity to the new strata. All deposition, therefore, except in the case of a shower of volcanic ashes, is the sign of superficial waste going on contemporaneously and to an equal amount elsewhere. The gain at one point is no more than sufficient to balance the loss at some other. Here a lake has grown shallower, there a ravine has been deepened. The bed of the sea has in one region been raised by the accumulation of new matter, in another its depth has been augmented by the abstraction of an equal quantity. Nothing whatever is annihilated. For "matter," says Roucher, "like an eternal river, still rolls on without diminution." Everything perishes: yet nothing is lost. E.

**Annoyance a Law of Life.**—Every-day events manifest to very superficial observation that no created being, from the monster of the ocean to the insect that feebly creeps on the ground, exists free from the persecutions or annoyances of another. Some may be subject to fewer injuries than others, but none are wholly exempt: the strong assail by power, and become assaulted themselves by the minute or weak. The hornet attacks the wasp. The wasp itself seizes the house-fly, and the fly in its turn is conducive after its manner to the death of many an animal. J.

**Annoyances, Mortal Effects of Multiplied.**—Near Golubacs, on the Danube, there is a range of caverns famous for producing the minute poisonous fly too well known in Servia and Hungary under the name of the Golubacser fly. These singular and venomous insects, somewhat resembling mosquitos, generally make their appearance during the first great heat of the summer, in such numbers as to appear like vast volumes of smoke. Their attacks are always directed against every description of quadruped, and so potent is the poison they communicate, that even an ox is unable to withstand its influence, for he always expires in less than two hours. This results, not so

much from the virulence of the poison, as that every vulnerable part is simultaneously covered by numbers of these most destructive insects; when the wretched animals, frenzied with pain, rush wild through the fields till death puts a period to their sufferings, or they accelerate dissolution by plunging head-long in the rivers. #During life's pilgrimage a man has sometimes to pass through scenes which are fraught with petty annoyances. They harass him like these flies. He may successfully defy several; but when he is simultaneously attacked by them on all hands he often utterly collapses, or goes mad. RO.

**Annoyances, Our Allotted.**—The gadfly or breeze-fly of the sheep, *Æstrus* (*Cephalemyia*) *ovis*, has obtained notoriety on account of its attacking those animals. Even at the sight of this insect the sheep feels the greatest terror. As soon as one of them appears the flock becomes disturbed. The sheep that is attacked shakes its head when it feels the fly on its nostril, and at the same time strikes the ground violently with its fore feet; it then commences to run here and there, holding its nose near the ground, smelling the grass, and looking about anxiously to see if it is still pursued. It is to avoid the attacks of the *Cephalemyia* that during the hot days of summer sheep lie down with their nostrils buried in dusty ruts, or stand up with their heads lowered between their fore legs, and their noses nearly in contact with the ground. When these poor beasts are in the open country, they are observed assembled with their nostrils against each other and very near the ground, so that those which occupy the outside are alone exposed. #It seems singular that an animal so thoroughly harmless as the sheep should be tormented in this manner. Yet so it is. There appears to be a law running through creation ordaining to each creature certain allotted annoyances. Men are no more exempt from this law than sheep. Even the most harmless among them has to endure his gadfly. To one it comes in the form of unaccountable disease, to another in the form of systematic bad fortune, to another in the form of insolent children, to another in the shape of a Xantippe-like-wife; but in some way or other every man has to

endure his allotted annoyance. There is not a man who has not his gadfly. I.

**Antidote Supplied by Nature, A Needed.**—The Quinquinas (genus *Cinchona*; family *Rubiaceæ*) are medical plants, than which none are more precious. They grow along the eastern slope of the Andean Cordilleras in the republics of Venezuela, New Granada, Ecuador, Peru, and Bolivia. The bark is the most effective of all febrifuges, and is endowed with very valuable tonic and depuratory properties. Sir Samuel Baker, in an address to the British Association at Dundee, pronounced it the traveler's best friend, the powerful weapon with which he could securely enter the African wilderness, and successfully contend against its demon-host of fevers and agues. And as if by a kind of compensation, the tropical forests, which contain so many poisonous fruits, produce such trees as these. D.

**Appearance at Variance with Character.**—The Medusæ are among the most beautiful creatures in Nature, and appear absolutely harmless. Wonderfully beautiful as are their form and color, the amount of solid matter contained in their tissues is incredibly small. The greater part of their substance appears to consist of a fluid differing little, if at all, from the sea-water in which the animal swims; and when this is drained away, so extreme is the tenuity of the membranes which contained it, that the dried residue of a "jellyfish," weighing two pounds, which was examined by Professor Owen, weighed only thirty grains! Yet these creatures are capable of executing movements with considerable vivacity; their disk contracts and dilates alternately by the action of a band of what must be regarded as a muscular tissue; their tentacles are capable of seizing upon and destroying, by a subtle venom, animals of far more complicated structure than themselves; and their delicate stomachs have the power of speedily digesting the victim. Small fishes and crustacea, and all the infinite multitude of minute marine creatures, are seized and paralyzed by their deadly arms; and as the mouth and stomach are capable of almost indefinite dilation, the size of their prey often appears exceedingly disproportion-

tionate. In fact, in spite of the extreme delicacy of their tissue, these beautiful Medusæ are among the most voracious inhabitants of the ocean. They afford another instance of the fact that, whether among fishes or men and women, a beautiful and harmless appearance is not inconsistent with a greedy and poisonous character.

N. H.

**Appearance with a Bad Character, A Fine.**—When the peacock appears with its tail expanded, there is none of the feathered creation can vie with it for beauty, yet the horrid scream of its voice serves to abate the pleasure we find from viewing it; and still more its insatiable gluttony and spirit of depredation make it one of the most noxious domestics that man has taken under his protection.† Who has not known peacock-men in every department of life—those who, by their admirable demeanor, elegance, suavity, and graces, have irresistibly awakened admiration, yet on acquaintance were detected as the possessors of qualities which belied their appearance and rendered them odious? Who has not known acquaintances whose appearance suggested everything that was chaste, refined, and graceful, but whose disposition was in every way unlovely—who, like the peacock, were delightful as a spectacle, but in other respects detestable?

A.

**Appearances Fallacious Tests.**—We require to be incessantly discriminating between the reality and the thing that is like the reality. Even the insect and the leaf enforce this lesson. Look at those singular insects of which the herbivorous tribe *Phasmina* is composed, to which, from their close resemblance to vegetable productions, the names of *walking-sticks* and *walking-leaves* are commonly given. Both are remarkable in their appearance. In the walking-leaves (*Phyllidæ*) the body is very flat and thin, and the wings form large, leaflike organs, covering nearly the whole abdomen, and furnished with irregularly reticulated nervures, which give them exactly the aspect of a leaf. This leafy structure pervades the whole animal; the legs, especially the thighs, being always foliaceous. Some species are of a bright green color, while others are of the

brown of dead leaves ; and the natives of the countries inhabited by these curious creatures generally inform Europeans that the insects are all green at first, but that as the leaves change color they change also. But even amid the changes still the "things are not what they seem." Take another example illustrating the same principle. It is well enough known that many creatures formerly supposed to be vegetable, such as the corals and the zoöphytes, have since found their proper place in the animal kingdom ; and one consequence of this reformation was, that several real plants were supposed to be animals, because they possessed some of the characteristics which had distinguished those animals that had been placed in their proper position. Of these plants the coralline is a good example, for until a comparatively late period it was placed among the animals in company with the true corals. There was reason for this error, for the coralline is a very curious plant indeed, gathering from the sea-water, and depositing in its own substance, so large an amount of carbonate of lime that when the purely vegetable part of the alga dies and is decomposed, the chalky portion remains, retaining the same shape as the entire plant, and very much resembling those zoöphytes with which it has been confounded. While growing, the coralline is of a dark purple color, but when removed from the water the purple tint vanishes, and the white stony skeleton remains. It is, however, a true vegetable, as may be seen by dissolving away the chalky portions in acid ; there is then left a vegetable framework precisely like that of other algæ belonging to the same subclass.

N. H. & C.

**Appreciation Intensified by Occasional Deprivation.—**

As a rule men and women do not appreciate keenly those things which they always possess. Occasional absence makes the heart grow fonder. Take, for example, the zest with which we enjoy the return of vegetation in spring, because we have been deprived of it all the winter. The inhabitants of the southern hemisphere—South America, Australia, and the Cape of Good Hope—have no such zest in reference to their vege-

tation, because its leaves are not periodically lost. Thus those people lose the enjoyment of, perhaps, one of the most glorious spectacles in the world—the first bursting into full foliage of the leafless tree. They may, however, say that we pay dearly for our delight by having the land covered with mere naked skeletons for so many months. This is too true; but our senses acquire a keen relish for the exquisite green of the spring, which the eyes of those living within the tropics, sated during the long year with the gorgeous productions of those glowing climates, can never experience.

RO.

**Assimilation.**—There is in man a principle of assimilation. From books, companions, and circumstances he extracts just those principles which will build up his character. Out of heterogeneous materials his nature converts to its own use whatever is appropriate. So it is with his body. However various the articles of food and drink may be, it is clear that there is a process by which all differences are annulled and a uniform result attained. Whatever characters these substances may have *outside* the organism are altered shortly after their entrance *into* it; specific differences vanish, and all varieties are merged in a vital unity.

PH.

**Associated Labor, Triumph of.**—A single bee, with all its industry, energy, and the innumerable journeys it has to perform, will not collect more than a teaspoonful of honey in a single season, and yet the total weight of honey taken from a single hive is often from sixty to one hundred pounds. A very profitable lesson to mankind of what great results may arise from persevering and associated labor!

I. O.

**Astonishment.**—Certain folks are perpetually being astonished. The stanch old Churchman is astonished at any innovation in the form of worship; he cannot recognize his religion unless it has always the same surroundings. The old Tory is always astonished at the inevitable changes in the details of the Constitution; for unless he has all the same externals he cannot believe his position to be safe. Among domestic animals the cow is the worthy representation of this feeling of astonish-

ment. On any alteration of its accustomed haunts, such as the change in the appearance of a building, it is as astonished as a narrow theologian is at a new theological term. The astonishment of the cow at a new door has made the proverb, "Like a cow at a new door." Dogs are astonished at any change in the outward appearance of those they are familiar with, and at any strange object: encompassing it repeatedly, and smelling at it to discover its nature. They cannot recognize their master in the water, but swim round him, astonished at hearing his voice, without identifying him. P.

**Athletic Glory.**—The young athletic negroes in their ivory hunts well know the prowess of the gorilla. He does not, like the lion, sullenly retreat on seeing them, but swings himself rapidly down to the lower branches, courting the conflict, and clutches at the foremost of his enemies. The hideous aspect of his visage, his green eyes flashing with rage, is heightened by the thick and prominent brows being drawn spasmodically up and down, with the hair erect, causing a horrible and fiendish scowl. Weapons are torn from their possessor's grasp, gun-barrels bent and crushed in by the powerful hands and viselike teeth of the enraged athlete. Two negroes will be walking through one of the woodland paths, unsuspecting of evil, when in an instant one misses his companion, or turns to see him drawn up in the air with a convulsed, choking cry, and in a few minutes dropped to the ground a strangled corpse. The terrified survivor gazes up, and meets the grin and glare of the fiendish giant, who, watching his opportunity, had suddenly put down his immense hind hand, caught the wretch by the neck with resistless power, and dropped him only when he ceased to struggle. We make a great boast at the present time about our athletics. Mr. Wilkie Collins, in his masterly preface to "Man and Wife," expatiates upon the disastrous effect which has been produced upon society by "the recent unbridled development of physical cultivation in England," and clearly proves the intimate connection which exists between that and the "recent spread of grossness and brutality among certain



classes of the English population." Yet there are thousands of gentlemen who almost venerate one of their number who may happen to be an athlete. They appear to consider that the qualities which make up the character are really noble. Let them study the gorilla, the ape which most resembles man, and then reflect that when they have done their utmost to train for the championship of the world, that awful brute is their superior. RO.

**Atom, The World Mirrored in an.**—There are myriads of atoms existing in a single drop of water, recreating and executing all their functions and evolutions with as much rapidity and apparent facility as if the range afforded to them was as boundless as the ocean. He who has attentively watched the motions of these living atoms in a single drop of water, as displayed by the oxyhydrogen microscope, must feel impressed with the conviction that their motions are voluntary, and that their lives, like that of man, exhibit a mingled scene of pain and of enjoyment. Their extreme minuteness, as judged of by our feeble senses, does not prevent them from having a multiplicity of organs for their use, probably as perfect as in much larger animals. S.

**Attraction Reciprocal.**—Reciprocal attraction is a principle running throughout the world. Its result among men is friendship. Its consequence in matter is adhesion. If two leaden bullets are cut with a penknife so as to form two equal and brightly polished surfaces, and the two faces are pressed and turned against each other until they are in the closest contact, they adhere so strongly as to require a force of more than one hundred grams to separate them. The same experiment may be made with two equal pieces of glass, which are polished and made perfectly plane. When they are pressed one against the other, the adhesion is so powerful that they cannot be separated without breaking. As the experiment succeeds *in vacuo* it cannot be due to atmospheric pressure, but must be attributed to a reciprocal attraction between the two surfaces. The attraction also increases as the contact is prolonged, and is greater in proportion as the contact is close. So with true friendship. EL.

**Attractive may be Perilous, The.**—Of the poisonous plants of South America, an interesting one is the manchineel (*Hippomane Mancinella*). This tree thrives best, it is said, on the sea-shore. It bears a profusion of very pretty fruit, resembling in form and color the red apple (the Spanish *Manzanillo*) and exhaling an agreeable lemonlike odor. They are, therefore, scarcely less beguiling than Dead Sea fruits; but they are also very poisonous, yet less deadly than the milky juice which flows from the slightest incision made in the tree's thick and grayish bark. This juice, received into the stomach, or introduced into the blood through a wound, slays the victim with awful quickness. If it do but touch the skin, it excites a violent irritation, and raises swellings or boils of the worst description. The very vapor which it emits causes a painful itching in the eyes, the lips, and the nostrils. It was formerly asserted that to sleep under the shade of a manchineel-tree was certain death, but the naturalist Jacquin, in the interests of science, courageously made the experiment and proved the falsity of the story. D.

**Audacity and Ingratitude as Natural Characteristics.**—The cuckoo is a perfect type of a creature endowed by Nature with audacity and ingratitude as its prominent characteristics. Instead of building a nest for itself, the cuckoo always audaciously deposits her eggs in the nests of some of the smaller insectivorous birds, generally placing only one egg in each nest. The egg of the cuckoo is comparatively of small size, so that the small birds into whose nest the intruder is thus foisted are not alarmed at its presence, but hatch it together with their own offspring, and when hatched pay as much attention to the young parasite as if his presence in the nest was perfectly legitimate. The young cuckoo, however, repays all this care with a behavior which is gross ingratitude; for as soon as he has acquired sufficient strength, he proceeds in the most businesslike manner to get rid of his foster-brothers, in order to appropriate to the gratification of his own inordinate appetite the whole of the supplies brought by the parent birds. For this purpose he gently

insinuates himself under the body of one of the young birds, and, by the assistance of his wings, contrives to hoist the unfortunate little animal upon his back, which is furnished with a peculiar depression to enable the latter to rest comfortably in that dangerous position. Having succeeded thus far, the young cuckoo proceeds backward to the edge of the nest, and then, with a sudden jerk, throws off his burden. In this manner, in the course of a few days, the usurper remains in undisturbed possession of the nest, and secures to himself the entire attention of the birds which he has thus deprived of their legitimate offspring. This care is continued long after the young cuckoo has left the nest. We see, therefore, that both the audacity and the ingratitude which are the characteristics of this bird are crowned with success. When we reflect upon this singular fact, we cannot fail to be struck by the coincidence that these same qualities are just those which have been such powerful factors in the success of many men. Nor is it less remarkable that there are certain families which Nature has endowed with audacity and ingratitude as their most striking peculiarities. The biography of such persons reveals quite plainly that it was owing entirely to these cuckoolike endowments that success attended them throughout their career. The cuckoo instinct guided them.

N. H.

**Audacity a Means of Success.**—What may have been the cause of attributing a high degree of ferocity to the tiger, is its incredible audacity. In this it differs from the lion, for when hungry no obstacle, not even the most certain danger, will arrest it. Nor does it delay nor employ artifice to entrap its prey, nor will it abandon it if too powerful; neither does it wait to be reduced by hunger to the last extremity before it braves every obstacle. No; it throws itself without hesitation on the first object that presents, whether man or animal, and will face death a thousand times in order to carry it off. This temerity is frequently crowned with success. Not only is it so in the case of tigers, but it is so also in regard to men. The French people consider that the success of the men who imposed the

first French republic upon the reluctant nation was due to their acting up to "the maxim of one of their grand prototypes of 1793, *de l'audace, encore l'audace, toujours de l'audace.*" Whether this estimate be correct or not, certain it is that many of the vast things of history owe their accomplishment to the exhibition of that same quality which distinguishes the tiger—"audacity, always audacity." M.

**Authors, Posthumous Mischief of Immoral.**—It is a remarkable fact, and is proved by Dr. Bell (in his "History of British Insects"), that the poison of the rattlesnake is even secreted after death. Dr. Bell, in his dissections of the rattlesnakes which have been dead many hours, has found that the poison continued to be secreted so fast as to require to be dried up occasionally with sponge or rag. The immoral author, like these rattlesnakes, not only poisons during his lifetime, but after death: because his books possess the subtle power of secreting the venom to a horrible degree. A moral sponge is constantly called into requisition to obliterate his poison for many years after he himself has been dead. RE.

**Autocrats, The Jealousy of.**—Autocrats, whether elected or usurping, are all more or less jealous. The female autocrat is in some respects worse than the male. Two queen bees will not live together in the same hive. And indeed, as soon as a young queen bee is about to lay her eggs, she is anxious to destroy all the royal pupæ which still exist in the hive. When she has become a mother, she attacks one after the other the cells which still contain females. She may be seen to throw herself with fury upon the first cell she comes to. She tears an opening in it large enough for her to introduce her sting. When she has stung the female which it contains, she withdraws to attack another. Man is not much behind these jealous insects. Among certain tribes of Ethiopians the first care of the newly crowned chief is to put in prison all his brothers, so as to prevent wars by pretenders to the throne. And even among more civilized nations the records are numerous of the mean and petty tricks and cruelties adopted by kings and

queens for disposing of any possible rivals. In favor of Her Most Gracious Majesty the Queen Bee it must be said that when she has fairly got rid of all dread of rivalry, she does set to her own legitimate work for the benefit of the bee community with indefatigable zeal. It is to be regretted that equal commendation cannot be given to the human autocrat, whose laziness and roguery usually increase when security is assured.

I.

**Avarice, A Retribution on.**—In the island of Ternate, belonging to the Dutch, a place that had been long celebrated for its beauty and healthfulness, the clove-trees grew in such plenty that they in some measure lessened their own value: for this reason the Dutch resolved to cut down the forests, and thus to raise the price of the commodity, but they had soon reason to repent of their avarice; for such a change ensued by cutting down the trees that the whole island, from its being healthy and delightful, having lost its charming shades, became extremely sickly, and has actually continued so to this day. A.

**Avidity, The Utilization of.**—The cormorant (*Phalacrocorax carbo*) has an insatiable appetite. The havoc it commits in rivers where it successfully dives for fish is very great. The Chinese and Japanese utilize its habits for their own purpose. They turn them loose into waters abounding with fish, and place a ring round their neck which prevents them from swallowing the prey when it is caught. The bird is trained to know its master's voice, and at his call brings him all the fish it captures. It is wonderfully dexterous and successful in securing the fish, and thousands of small rafts and boats are used entirely for this species of fishery. This is one of the many ways in which men show that they can profit by the avidity of others. A natural thief is so greedy that he is often employed by official authority to catch others; and hence we have the proverb, "Set a thief to catch a thief." Lawyers are so rapacious for money that they can be employed to hunt to the ends of the earth a man who owes any to their client; so that Lord Brougham once defined a lawyer as "a man who wins back

your estate for you, and keeps it himself." The legal cormorant is, however, in these days under better control, and, like the ringed bird, now illustrates how avidity may be safely utilized.

RE.

**Beautiful, The Production of the.**—Beauty, of course, is a mere mental conception. But if we once possess the idea and love it, we shall find that we enjoy a great capacity for the production of that which corresponds to our idea of what is beautiful. This does not only apply to the moral world, but also to the material. There we can produce the beautiful even out of very unpromising materials. Who could have anticipated that matters so dull and common as sand and the ash of a wood fire should, under certain circumstances, unite to form bright transparent glass? What feat can be conceived more wonderful than, from a substance so dingy, dirty, and unpromising as coal-tar, to create the beautiful series of aniline colors which we admire as mauve, magenta, solferino, and bleu de Paris? To such perfection, indeed, has chemistry now carried this branch of manufacture, that there is hardly any tint which may not be obtained from coal-tar by skilful treatment.

**Beauty, Subtleness and Fragility of.**—Forms and existence of beauty, how evanescent they are! How subtle, how fragile, yet what a fascination they possess! Behold them on a humble scale in the life of the *Cydippe pileus*, which is fragile as its form. It plays about rapidly, for a time, in its little world of water, then dies, and disappears as if it had melted into nothing. Yet when alive, even if it be cut in pieces or broken up by the force of the waves, as is often the case, its ciliated bands still continue to perform their work, and the iridescent light plays over the fragments as beautifully as when the existence was entire. But, beyond compare with these forms of beauty, see yonder glowing sunset, and its wondrous tints and lights in their vast supernal splendors! Oh, vision of beauty! Alas! as we gaze the tints are fading, and the lights grow dim; the celestial panorama is dissolving; the night winds blow across the dismal sea, and a few darkening clouds and faint streaks

of amber light alone remain to tell of the evanescence of beauty.

D.

**Beauty, Unostentatious.**—The name of Aphrodite, the Greek goddess of beauty, was first given to the sea-mouse on account of its marvelous loveliness. The beauty of its hairs is almost inconceivable. They are as magnificently colored as the plumes that decorate the throat of the humming-bird, and, unlike those feathers, change their color with every movement. Every color of the rainbow is reflected from these hairs; and as each individual hair reflects a different color, it may be imagined that the appearance of the animal is indeed beautiful. Why the creature should be endowed with such a gorgeous dress is not easy to see, because it lives where the light seldom penetrates, and where its splendid clothing is all hidden. The chosen habitation of the aphrodite is in the muddy bed of the sea, and as if not satisfied with humbly hiding its beauties in the black and fetid mud, it creeps beneath stones or shells, so as to be completely hidden from the light. It is an illustration of a too retiring unostentatious beauty, and is the reverse of the picture of flaunting elegance exhibited by both the peacock and the vain belle of fashionable society.

F.

**Being, How to Test the Worth of any.**—If we put ourselves entirely on one side, and try to look at animal life as a thing in which we had no part, we should, of course, in attempting to fix the rank of any being, be guided almost exclusively by the range and complexity of the duties the creature was enabled to fulfil. We should use function almost by itself as a test of worth, and should look upon structure as simply the means to an end. Dignity of function, springing as it does out of intricate and finished machinery, must, when we look at animals apart from ourselves, form the standard by which rank in life can be judged. On the one hand, we may ponder over the dreary simplicity of a fish's life, the monotony of its daily swim, the low character and even small amount of nervous energy required to move its uniform masses of muscle, and the feeble working of its diminutive brain—limited, apparently, to the

stirring up, through rough and gross sensual perceptions, of a turbid consciousness, which the accumulation of even years of experience can hardly mold into anything like intelligence. Even in performing that duty which usually calls forth the highest cerebral activity, viz., the care of the young, the greatest effort of the fish is perhaps to construct a nest of the rudest kind. But turning from these cold and flabby creatures to the gifted bee, and meditating upon its bright and varied life—on those wonderful exhibitions of its power and skill which never fail to excite the admiration of mankind, and on its finely wrought and compact organization put to use in the facile accomplishment of difficult and delicate tasks—we think it natural to rank so full a life above that of the plainer vertebrate. The bee's life is as short as it is bright: it has little time to learn; little opportunity of accumulating experience either for itself or for its offspring. If it were long-lived, and the race to continue long-lived through many generations, there would probably cease to be any dispute about the reason and instinct of bees. If we are to consider mankind as standing at the head of creation, we can only do so by virtue of our many powers and resources, and by reason of our mastery over the circumstances of life. If we are to single out of the human race particular individuals for especial rank, it should be those who are qualified for high service by reason of the range and character of their virtues and faculties. Q.

**Benignant Soul, The.**—The benignant soul possesses a vital energy and an ubiquity which resemble the moss. It matters not to the healthy action of the mosses' functions whether the surrounding air be stagnant or in motion, for we find them on the mountain top amid howling winds and driving storms, and in the calm, silent, secluded wood, where hardly a breeze penetrates to ruffle their leaves. The range of flowering plants is circumscribed by conditions of light, temperature, elevation above the sea, geological character of the district, and various other physical causes; but the wonderful vital energy with which the mosses are endowed enables them to resist the



most unfavorable influences, to grow freely and luxuriantly even in the bleakest circumstances, and to acclimatize themselves, without changing their character, in any region of the earth, and every kind of situation upon its surface. They symbolize the benignant soul. It is found in connection with every form of religion, and where there is no form of religion at all. In the fierceness of a world's persecution it maintains its place, yet graces the humble secluded paths of private life. It is found in men of all colors and climes; and, in various forms, dwells wherever there is suffering which needs solacing, or calamities which demand heroism.

FO.

**Biter Bitten, The.**—The common pinna (*Pinna pectinata*) are plentiful on the southern coasts of England, particularly in Cornwall. One or two inches of the pointed end of the shell are inserted in the soil. In its ordinary position this opening in the shell is about two inches wide, exposing the contained animal, which occupies but a small portion of the cavity, and seems to offer itself as a prey to the first creature that may choose to devour it. Some fish is thus tempted to enter, but the first touch within is a signal for destruction. The shell closes not only at the side but top, the latter action being effected by the separation of the pointed ends, and the captive is either crushed to death, or soon perishes from confinement. Here is a lesson to men who are audaciously aggressive in their cupidity. The pinna which you covet may encompass you!

C. S.

**Blessings in Unexpected Places.**—Poor as may be the fauna of the desert, there is yet cause enough for astonishment that the species which compose it, especially the herbivora, should be able to find subsistence in these seas of sands, where they can find but a few saline plants scattered at rare intervals, and where fresh water is almost wholly wanting. It is, however, well known nowadays that the wilderness provides its denizens with an aliment, which is sometimes very abundant, suitable for man, the camel, and the beasts, and is considered identical by many authorities with the manna of the Bible. This

substance is a cryptogamous vegetable, variously christened *Lichen esculentus* (Acharius), *Lecanora esculenta* (Pallas), *luttarut* (by the Arabs), and *vassela-el-ard* (by the Algerines). It sometimes forms on the sand, in the morning, a layer one or two inches in thickness, and appears to have dropped from heaven, or to have sprung spontaneously from the soil during the night. It is probable that its spores, transported by the wind, are developed by the humidity which is condensed through the nocturnal coldness. A growth like this teaches us not to be depressed on occasions when we may happen to be in the wilderness tracts of our life. For we often find blessings in unexpected places. Do not be afraid of the wilderness when you remember the manna, and observe in this wonderful provision of Nature how much of aptness there is in Isaiah's allusion to the wilderness as a fruitful field. D.

**Blessings are Relative.**—In the recesses of the great cave of Kentucky, miles underground, there are waters which no ray of sunlight ever reaches, and which are inhabited by blind insects and blind fishes. Dr. Wyman examined fourteen of these fishes (*Amblyopsis speleus*), and in three or four of them only was he able to detect an eyeball beneath the skin. These he dissected, and found that the eye was wholly covered by areolar tissue, and was not organized to receive images of external objects. Now, it is universally affirmed that light is one of the greatest blessings in the world; and it might be supposed that if it could be made to penetrate into any such recess as this cave it would be a vast benefit. Yet what waste of energy it would be to break through the rocks and open the rayless waters to the sunlight! For here you have creatures which do not need light; "eyes which see not," and lives which are independent of the sun. That which would be an unspeakable blessing to others would be no blessing here. To labor to light up this place would be as unnecessarily disappointing as are the labors of those educationists who carry the blessings of music to unharmonious souls; of reasoning to addle-pated dolts; of poetry to blockheads; of Christliness to hypocritical formal-

ists. Blessings are relative things. It is absurd to judge that the same thing will benefit all. It is waste time to attempt to carry the light of knowledge to creatures whose natures are disqualified for its reception. The spiritual eyes of some men are not organized to receive impressions. All, therefore, that we have a right to expect from such individuals is that they will harmlessly fulfil their destiny in the darkness which is natural to them.

MU.

**Blessings Neutralized.**—The world is full of instances of blessings which are neutralized by surrounding circumstances. Springs of fresh water are often found rising up in the sea. Nevertheless the sailor dies of thirst, because the properties of the fresh water are merged in and rendered inert by the sea; so he wails with the Ancient Mariner,

“ Water, water everywhere,  
But never a drop to drink.”

In social life we may see people blessed with ample riches, but the benefit of them is rendered inactive by reason of disease or meanness. In the domestic world we may often see all the pure springs of home enjoyment completely neutralized by the bitter waters of discontent, peevishness, vanity, and female selfishness.

MA.

**Blessings, The Diffusion of.**—The globe of the earth is surrounded with a mass of atmosphere extending forty or fifty miles above the surface. Each particle of air is a luminous center, receiving its light from the sun, and it radiates light in every direction. Were it not for this, the sun's light could only penetrate those spaces which are directly accessible to his rays. Thus, the sun shining upon the window of an apartment would illuminate just so much of that apartment as would be exposed to his direct rays, the remainder being in darkness. But we find, on the contrary, that although that part of the room upon which the sun directly shines is more brilliantly illuminated than the surrounding parts, these latter are nevertheless strongly illuminated. In the social world, too, there are luminous centers.

These are noble souls, who, being especially blessed themselves, diffuse in every direction some of the blessings which they have received. Were it not for them, and their power of spreading brightness, goodness, and joy, the world would be indeed rayless and cold.

HA.

**Blusterer's Demeanor and Collapse, The.**—The blusterer reminds us of the dor-beetle (*Scarabæus stercorarius*), for he is noisy and affects fearlessness, yet is a great coward. The dor-beetle, with a violent and noisy flight, proceeds on its way, or circles around with an apparent fearlessness of harm; yet the instant it is touched, or interrupted in its progress, though in no way injured, it will immediately fall to the ground, generally prostrate on its back, its limbs extended, stiff, and seemingly devoid of life, and suffering itself to be handled without manifesting any signs of animation. In time, finding no harm ensues, it resumes its former state.

J.

**Braggadocio, The Destiny of the.**—The ruffed grouse (*Bonasa umbellus*) found in the United States of America measures about eighteen inches in length, and furnishes an exceedingly delicate food. The most remarkable of the American species is the pinnated grouse (*Tetraro cupido*), which is found, though rarely, in many parts of the United States. A remarkable habit of these birds is thus described by Mr. Mitchell in Wilson's "American Ornithology": "During the period of mating, and while the females are occupied in incubation, the males have a practice of assembling principally by themselves. To some select and central spot, where there is very little under-wood, they repair from the adjoining district. From the exercises performed there, this is called a *scratching-place*. The time of meeting is the break of day. As soon as the light appears, the company assembles from every side, sometimes to the number of forty or fifty. When the dawn is past, the ceremony begins with a low tooting from one of the cocks; this is answered by another. They then come forth one by one from the bushes and strut about with all the pride and ostentation they can display. Their necks are incurvated; the feathers on

them are erected into a sort of ruff; the plumes of their tails are expanded like fans; they strut about in a style resembling, as nearly as small may be illustrated by great, the pomp of the turkey-cock. They seem to vie with each other in stateliness; and, as they pass each other, frequently cast looks of insult, and utter notes of defiance. These are the signals for battles. They engage with wonderful spirit and fierceness, leaping a foot or two from the ground, and uttering a cackling, screaming, and discordant cry." Occasionally, however, these exhibitions of pride receive rather an unpleasant interruption; for the hunters often find out the scratching-places, and by concealing themselves overnight, with their guns, in huts of pine branches, within a few yards of the spot, deal wholesale destruction upon the unfortunate birds, while these are engaged in strutting about or fighting. It is the destiny of the braggadocio to be caught in his work. Whether the braggadocio be feathered or human, the end must be the same. Noise, swagger, vainglorying, and fighting must attract the attention of strong enemies. Those enemies, of course, bide their time; and when proud braggarts are utterly engrossed in their fightings, they make them an easy prey. Emperors and grouse are equally fated when they assume the character of the braggadocio. ND.

**Bright Tints in Unexpected Places.**—The bright and the beautiful often arrest our attention where we should not have expected to have discovered them. Take colors, for example. All transparent bodies, solids, liquids, or gases, when in sufficiently fine laminæ, appear colored in very bright tints, especially by reflection. Crystals which cleave easily, and can be obtained in very thin plates, such as mica and selenite, show this phenomenon, which is also well seen in mother-of-pearl and in soap-bubbles. A drop of oil, unattractive enough in its own appearance, when spread rapidly over a large sheet of water, exhibits all the colors of the spectra in a constant order. Even a soap-bubble, when it is blown out, is brilliant and iridescent.

**Brightness in Combination with Impurity.**—The illu-

minating power of phosphorus appears due to an extremely slow chemical reaction, and it is affirmed that vegetable and animal substances may grow phosphorescent at a certain stage of decomposition, or even without any appearance of putrefaction. Accredited authorities cite a host of examples of fresh or stale meats which have been seen to shine during the night with a more or less vivid clearness. Fish, and especially salt-water fish, when no longer fresh, acquire a phosphorescence which brightens during the first period of putrefaction. Leave for two or three days dead salt-water fish in non-luminous seawater: at the end of that time the water will be covered with a thin pellicle of fatty matter, and will soon become phosphorescent. But it is not only in material nature that we thus find brightness in combination with impurity. Genius itself has been found shining amid moral putrefaction. When so found its light is ephemeral and phosphorescent, but when allied to moral goodness its blaze is like the sun. MY.

**Brilliant, but Nasty.**—The luminous shark (*Squalus fulgens*) emits, from its head and body, a vivid greenish phosphorescent gleam. Yet this imparts to the fish a truly ghastly and terrific appearance. You are fascinated by the brilliancy, but repulsed by the creature which it reveals. The same feeling is excited in our minds by certain men and women of genius whose wit and fancy sparkle over moral hideousness in three-volume novels. Their intellectual light may be attractive; but the appearance of their moral nature, under their own irradiation, is horrible. G.

**Bully, The Characteristics of a.**—There is no animal, how contemptible soever, that will venture boldly to face the turkey-cock, that he will not fly from. With great insolence, however, on the other hand, he pursues everything that seems to fear him, particularly lap-dogs and children, against both which he seems to have a peculiar aversion. On such occasions, after he has made them scamper, he returns to his female train, displays his plumage around, struts about the yard, and gobbles out a note of self-approbation. In fact, he exemplifies

all the characteristics of a bully. Like the human bully, he is officious, insolent, and loves self-display. His victories are trumpery, yet he is full of self-applause. He is an arrant coward, and therefore struts and swaggers, and delights in brag.

A.

**Bumbledom, The Philosophy of.**—The *Cristatella mucedo* is one of the most singular beings that America, or indeed any country, produces. It appears much as if it had been made of soft, woolly silk, and at first sight bears a resemblance to a long-haired caterpillar that had been flattened by accident. The strange point in this creature is that it is locomotive, and can crawl along with a steady and slow motion. How it manages to crawl is really a wonder. If it were a single animal, there would be no mystery about it; but it must be remembered that it is an aggregation of separate animals, each distinct in itself, though preserving a connection with all the others. To all appearance these animals have no particular organs of sensation, and their tentacles are merely outspread as nets to entangle any particles of food that may happen to float against them. It seems almost incredible that beings thus constituted should have any power of concerted action. Yet that such is the case is evident from the fact that the aggregated mass is able to crawl about, for unless the multitudinous animals agreed to move consentaneously, the entire mass would remain still. To prove that there is really a concerted action, and that the movement is not involuntary, it will be seen that the *Cristatella* does clearly choose the direction in which it goes, inasmuch as it shuns the dark and shady places, and loves to crawl in shallow water, where it can enjoy the light and heat of the sunbeams. This oddity is typical of Bumbledom. Bumbledom is one of the queerest forms of nineteenth-century social life. Considering the elements of stupidity, vulgarity, obstinacy, and jobbery of which it is agglomerated, it is wonderful that it makes any progress at all. Yet it does so; and it is remarkable that before it can take one single step even to secure benefits for itself, all the separate heads of stupidity, vulgarity, obstinacy,

and jobbery have to concur in the movement. Of course its pace is dismally slow; and since it resembles the *Cristatella mucedo* in so much, it would be satisfactory if we could add that, like its prototype, it is directed away from "shady places, and always toward the light." F.

**Business Aptitude.**—It is a noteworthy fact that an ant will always avail itself of any accidental circumstance that may assist it in building. One of these industrious little beings has been observed to take advantage of some straws that happened to cross one another, and to convert them into beams where-with the ceiling of its home could be supported, depositing little clay pellets in the angles formed by the straws, and then laying several rows of the pellets along the sides of the straws. On account of these extemporized beams, the ceiling was necessarily of much greater strength than those which were constructed in the usual manner. This insect possesses an aptitude for the business in hand. It understands how to turn everything to account in connection with the task in which it may be engaged. In this respect there is a great contrast between it and the jackdaw, who, when he flies toward his nest with a branch which he has selected as suitable for use in its construction, carries it crosswise, and so cannot enter any small aperture leading to his nest, and therefore has to abandon his load. This sort of business aptitude which the ant possesses is just that quality which, in a man, helps to make a fortune. Some men in a preëminent degree possess the antlike tact, which turns anything to account on the instant. H.

**Calmness under Attack.**—When attacked, either by force or by argument, we often lose our vantage-ground by our want of calmness. We may take a useful hint from the deportment of the gray heron. When this bird is closely pursued by its enemies, which generally are the eagle and the falcon, it makes an admirable but quiet defense. Its usual tactics are to wait for its enemy, using its bill like a lance in rest, and to allow the attacker to pierce himself through merely by his own impetuos-



ity. Sometimes the adversary gets completely impaled. "Be steady under attack," was the wise advice of Mr. Justice Willes to a young barrister. And the heron inculcates the same suggestion to everybody.

RE.

**Cantankerous Character, The.**—The life of the cantankerous man is like the life of the hamster rat in nearly all prominent particulars. The life of the hamster rat is, like his, divided between eating and fighting. It seems to have no other passion than that of rage, which induces it to attack every animal that comes in its way, without in the least attending to the superior strength of its enemy. Ignorant of the art of saving itself by flight, rather than yield it will allow itself to be beaten to pieces by a stick. If it seize a man's hand, it must be killed before it will quit its hold. The magnitude of the horse terrifies it as little as the address of the dog, which last is fond of hunting it. This ferocious disposition prevents the hamster from being at peace with any animal whatever. It even makes war with its own species. Whether the creature prides itself, like the cantankerous man, on being very brave because of all this unnecessary biting and fighting, we have no means of knowing. P.

**Capacity Determined by Sphere.**—Lyell mentions that when companies were formed in England to work the mines in Mexico, some of the English miners who were sent out, being fond of field-sports, brought grayhounds with them, to have the pleasure of coursing on the Mexican mountains, which abound in hares. They found, however, to their great mortification, that the dogs were quite unable to come up to the hares of Mexico. This is explained by recollecting that these grayhounds, being transferred from the low and flat lands of England to a mountainous country raised several thousand feet above the level of the sea, and thus experiencing a considerable diminution of atmospheric pressure, became short-winded, and incapable of running down their game. But in the course of a few years, their offspring which were born and brought up in the new country, having their chests and respiratory systems

adapted to this elevated situation, proved themselves in running down hares fully equal to their parents in England. s.

**Capricious Disposition, The.**—The genus *Guenon* comprises about thirty species of monkeys. Geoffroy-Saint-Hilaire says: "They have a singular aptitude in passing from gaiety, which is otherwise their usual state, to melancholy, from melancholy to joy, and from joy to anger in a few seconds, and from the slightest causes. We see them ardently desirous of obtaining a certain object, testifying the liveliest pleasure if allowed to possess it, and almost immediately after throwing it away with indifference, or breaking it in a fit of rage. We also see them delighting in the society of another animal, evincing in their own way the most tender regard for it, and then suddenly becoming irritated, pursuing it with hoarse cries, and biting it as if it were an enemy; immediately peace is made, and the caresses recommence and continue, until a new caprice brings about the same results." How much all this resembles the proceedings which we see among men and women who are types of the capricious disposition! m.

**Carcass-Seekers.**—Where the carcass is, there will the vultures be gathered. Directly an enterprise is brought to commercial ruin, what an awful array of hungry accountants, lawyers, jobbers, and rogues alight upon the scene, greedy, desperate, and keen! Their example seems to be the sociable vulture, an inhabitant of the interior of the Cape of Good Hope, and of the eastern parts of Africa. It dwells in the mountains, where the numerous caves and fissures furnish it with a good shelter in which to pass the night, or to repose during the day after a full meal. At sunrise they are seen perched upon the rocks in large bands; and from these stations they soar into the air to such a height as to become quite invisible. But, even at their greatest elevation, they still keep a sharp lookout upon the occurrences in the world below them; for no sooner does an animal die than the vultures are upon it, "seeming," as Le Vaillant expresses it, "to escape from a cavern in the sky." If a hunter kill an animal which he cannot remove at once, he

will find on his return that the vultures are already busy on its carcass, although a quarter of an hour previously not one was to be seen in the neighborhood. MU.

**Cast Down, but not Destroyed.**—The hawk's-bill turtle is the animal which furnishes the valuable "tortoise-shell" of commerce, and is therefore a creature of great importance. The scales of the back are thirteen in number, and as they overlap each other for about one third of their length, they are larger than in any other species where the edges only meet. In this species, too, the scales are thicker, stronger, and more beautifully clouded than in any other turtle. The removal of the plates is a very cruel process, the poor reptiles being exposed to a strong heat which causes the plates to come easily off the back. In many cases the natives are very rough in their mode of conducting this process, and get the plates away by lighting a fire on the back of the animal. This mode of management, however, is injurious to the quality of the tortoise-shell. After the plates have been removed, the turtle is permitted to go free, as its flesh is not eaten, and after a time it is furnished with a second set of plates. These, however, are of inferior quality, and not so thick as the first set. #

NA.

**Casulist's Defense, A.**—A peculiar organ possessed by many *Cephalopoda* is the ink-bag, a small pyriform sac, which secretes a dark-brown fluid; its contents may be discharged into the water, which is thus discolored for a considerable extent. When attacked, the animals constantly employ this artifice to facilitate their escape, the inky secretion producing a thick cloud in the water, under cover of which the cuttlefish rapidly retreats to a safe distance from the object which has excited his apprehensions. He saves himself by this mystification. The mind of a casulist performs an analogous feat when hard pressed in argument by an opponent. It is wont to envelop itself in a thick cloud of words. Under cover of their hidden meanings the casulist withdraws in great dignity, and the disputant, who would have been his match in a clear controversy, is left alone in defeat.

N. H.

**Cemetery, The Greatest.**—The crust of our earth is a great cemetery, where the rocks are tombstones on which the buried dead have written their own epitaphs. SI.

**Change, The Instinctive Love of.**—The quail, even when born in captivity and domesticated, burns with that instinctive love of change which distinguishes its species generally. At the usual season of migration captive quails become very uneasy, walk up and down their cages, and throw themselves against the bars with such force that they frequently fall back stunned, and sometimes even crush in their skulls.† In their case there obviously is operating something beyond the ordinary considerations of climate and need of food which stir many descriptions of wild birds to migrate. It would seem to be an instinctive love of change. The same inspiration is often seen in human beings. Some who, like the captive quails, have never had liberty to move into unknown spheres, and therefore cannot know whether removal were better or worse, are nevertheless often stirred with the strongest impulses to make some sort of change. The captive-born quail cannot know that numbers of his species every year leave the regions of Africa, cross the Mediterranean, and about the commencement of May spread themselves over Europe, returning again in September to accomplish the same journey. Yet there is within him an impulse as strong as they possess to seek liberty and change at Nature's appointed time. The instinct is not superseded by domestication. Like some men whom monotony drives nearly mad, he will risk his life in the attempt to follow where instinct prompts. RE.

**Change the sine qua non of Life.**—Oxide of carbon is a poisonous gas. It is truly called a poison, because its action is deleterious even in slight doses, no matter what may be the state of the atmosphere. Carbonic acid is only deleterious when the quantity in the atmosphere is such that the absorption of oxygen is frustrated. Carbonic acid passes to and fro, leaving the blood otherwise unaltered; but oxide of carbon really kills the blood. If we take a little venous blood and expose it to

oxide of carbon, it becomes instantly scarlet. In appearance the change has been nothing more than would have occurred had oxygen instead of the oxide been employed. But in fact the change has been very considerable. The effect of oxide is to render the blood-disks incapable of that process of exhalation on which the activity of the organism depends. The blood, to all appearance, preserves its vitality, for neither the form nor the color of its disks is altered; but the blood is really dead, because its restless changes are arrested. Ever wonderful is the fact constantly obtruding itself upon us, that life is inseparably linked with change, and that every arrest is death. Only through incessant destruction and reconstruction can vital phenomena emerge—an ebb and flow of being. The moment we preserve organic matter from destruction we have rendered it incapable of the restless strivings of life. A spirit like that of Faust seems ranging through all matter; and if ever it should say to the passing moment, "Stay! thou art fair," its career will be at an end.

PH.

**Change without Radical Alteration, Superficial.**—The Indians of South America have a curious art by which they change the colors of the feathers of many birds. They pluck out those from the part which they wish to paint, and inoculate the fresh wound with the milky secretion from the skin of a small toad. The feathers grow of a brilliant yellow color, and on being plucked out, it is said, grow again of the same color without any fresh operation. Here we have an illustration of an attractive change which is merely of a superficial character. Of course the birds which are operated upon in this way remain quite unaltered in habits and disposition; and any person who judges of the nature of the bird by its colors is utterly deceived. One of the triumphs of civilization consists in decking out men and women so as to improve their external appearance as much as these Indians improve that of the birds. One of our greatest follies consists in being taken in by the imposture. Decorations and stylish behavior no more alter the character of men and women than the milky secretion

of the toad alters the character of the birds. Do not judge the habits of the birds by colored feathers. Do not accept human beings as worthy your confidence merely because their aspect is attractive. They may be detestable persons in nature, and the appearance which has pleased you may be merely the superficial attraction with which the tricks of art have endowed them.

TR.

**Character, Tests of.**—There are tests by which the character of rock may be understood. The presence of carbonate of lime in a rock may be ascertained by applying to the surface a small drop of diluted sulphuric, nitric, or muriatic acid, or strong vinegar; for the lime, having a greater chemical affinity for any one of these acids than for the carbonic, unites immediately with them to form new compounds, thereby becoming a sulphate, nitrate, or muriate of lime. The carbonic acid, when thus liberated from its union with the lime, escapes in a gaseous form, and froths up or effervesces as it makes its way in small bubbles through the drop of liquid. This effervescence is brisk or feeble in proportion as the limestone is pure or impure; or, in other words, according to the quantity of foreign matter mixed with the carbonate of lime. Without the aid of this test, the most experienced eye cannot always detect the presence of carbonate of lime in rocks. It does not do to rely upon mere appearances either in the geological world or the social world. In neither sphere is it wise to assume that things are exactly what they seem. In the one world we test with acids, and in the other with questions. The chemical test, as we have seen, tells us the quality of our rocks; and the second enables us to ascertain how much manhood is in human bipeds. This moral test consists of questions directed with a view to ascertain how an individual is affected by vice, virtue, misery, nobility, and the like; and according to the effects produced upon him by these test problems depends the character which we assign to him. Goethe intimates that one capital way of testing a man's true character is by ascertaining what are the things which he considers to be ridiculous.

E.

**Character Defacement.**—The late George Newport, F.R.S., showed clearly by many experiments that if insects were injured accidentally or intentionally in their larval or chrysalidal state these insects showed traces of the injury in their perfect state. For instance, if a foot was injured in a grub, or the place where the wing or antennæ would be developed in the pupa, the foot, the wing, or other organ was defective in the perfect insect. In like manner it constantly happens that human character when mature exhibits the defacement of injuries done to it in its earliest stages. We can trace imperfect fidelity, imperfect honesty, imperfect truthfulness, and many other blemishes in the dispositions of our friends, to the unfortunate injuries inflicted upon various sides of their character by nurses, parents, teachers, or companions in the early days of its development. MU.

**Character and Circumstances.**—Man ought not to be the creature of circumstances, you say; but, as a matter of fact, you must admit that he is so. The vacillating man, the firm man, the suspicious man, the brave man, are they not all very much what circumstances have made them? Circumstances are like the soil, and men are like roots. The composition of the soil, like the circumstances of social life, varies singularly in different parts of the globe. In order that every point of the surface of the earth should be covered with vegetation, and that no part of it should be without that incomparable adornment, roots must take very varying shapes in order to accommodate themselves to these varieties in the composition of the soil. In one place the soil is hard and stony, heavy or light, formed of sand or clay; in another it is dry or moist; elsewhere it is exposed to the heat of a burning sun, or swept on the heights by the violence of the winds and atmospheric currents; sometimes it is sheltered from these movements of the wind in the depth of some warm valley. Roots, hard and woody, separated into strong ramifications, yet finely divided at their termination, are requisite for mountain plants whose roots are to live in the midst of rocks or between the stones, in order

that they may penetrate between the chinks of the rocks, and cling to them with sufficient force to resist the violence of hurricanes and other aerial tempests. Straight tap-roots and slightly crouching plants are fit for light and permeable soils. They would not suit close, clayey, and shallow soils. Such districts are suitable for plants whose roots stand horizontally just under the surface of the soil. So the circumstances in which some men can flourish would kill others. The brave, self-denying soul would perish in the hothouse of servility: the court fop would wither in the regions of bracing industry. Their roots are adapted to their localities. v.

**Character Consolidated by Time.**—By far the greater number of the stones used for building and road-making are much softer when first taken from the quarry than after they have been long exposed to the air; and these, when once dried, may afterward be immersed for any length of time in water without becoming soft again. Hence it is found desirable to shape the stones which are to be used in architecture while they are yet soft and wet, and while they contain their “quarry-water,” as it is called; also to break up stone intended for roads when soft, and then leave it to dry in the air for months that it may harden. Dr. MacCulloch mentions a sandstone in Skye, which may be molded like dough when first found; and some simple minerals, which are rigid and as hard as glass in our cabinets, are often flexible and soft in their native beds: this is the case with asbestos, salite, tremolite, and chalcedony, and it is reported also to happen in the case of the beryl. The marl recently deposited at the bottom of Lake Superior is soft, and often filled with fresh-water shell; but if a piece be taken up and dried, it becomes so hard that it can only be broken by a smart blow of the hammer. But it is not alone in the geological world that we find an illustration of the fact that character is hardened by time. We see the same truth stamped upon all human experience. For good or evil every man’s character becomes consolidated by time. If it is to be shaped so as to be fit for a corner-stone in the



Temple of Virtue, the process of preparation should begin early. History is replete with instances of men whose characters might have been wrought into harmonious proportions if the necessary care had been bestowed upon that task at the proper stage; characters which, in the absence of the requisite shaping, became difficult to handle and unsightly to gaze upon. Nor is there any deficiency in the record of those other characters which, though too plastic for reliance in their earliest stages, nevertheless became, under the seasoning influence of time, like strong monumental columns in the commonwealth. E.

**Character, A Test for.**—A solid is buoyant in a liquid in proportion as it is light and the liquid heavy. Thus the same solid is more buoyant in quicksilver than in water, and in the same liquid cork is more buoyant than lead. A solid which will float in one liquid will sink in another: thus glass sinks in water, but floats in quicksilver; ebony sinks in spirits of wine, but floats in water; ash and beech float in water, but sink in ether. All these effects are explained by the fact that in each case the solid sinks or rises according as it is heavier or lighter, bulk for bulk, than the liquid. The character of man, as he is found in modern society, may be tested upon a somewhat similar principle. Find out what sort of society the man has been able to float in, and you will ascertain something concerning his moral and intellectual weight. The society which will buoy up one man will have no sustaining power for another. A man of solid worth cannot float in giggle. A charlatan has no moral weight, and therefore can always, and in all societies, keep up with the scum. HA.

**Character and Reputation, The Distinction between.**—The size of the pholas and the sharpness of its markings vary in inverse ratio to the hardness of the rock in which it burrows. From the softest sea-beds are taken the largest and most perfect shells, while those specimens which are obtained from the hard limestone rocks are comparatively small, and the surfaces are rubbed nearly smooth. The very worst examples, however, are those which are found in gritty rocks, interspersed with peb-

bles. The shells that have burrowed into such substances are dwarfed, abraded, and often misshapen, and are regarded as valueless except to the physiologist. To him, of course, the pholas which they contain is just as good as any other pholas, for it is in all essentials the same sort of creature, though by reason of its shell an inexperienced amateur might judge otherwise. We must not always judge a creature by its shell, or a man by his reputation. The reputation which a man acquires is somewhat analogous to the pholas shell. It depends a good deal upon the kind of place where he has to work. Some men's reputations get much deformed by constant contact with harsh, objectionable, and unfriendly influences. Other men's reputations become beautiful because of the propitious and happy circumstances which surround the men. Yet the real character of all the men may be identical. We can detect the pholas by his life and habits. We detect a true man in the same way. Many men have had a hard time of it in boring their way through the adamantine social rocks. We must take that fact into account when we are considering their external appearance and reputation; and we must not doubt but their real character is just as good as that of the smooth courtier who has lived an easy life in burrowing in the luxuriance of palaces. H.

**Cheering Trifles.**—A somber night may, unless you are in an objectionable bed, be made less somber by even the presence of insects. In Canada you may often see the whole air, for a few yards above the surface of a large field, completely filled with fireflies on the wing, thicker than stars on a winter's night. The light is redder, more candlelike, than that of our glow-worm, and, being in each individual alternately emitted and concealed, and each of the million tiny flames performing its part in mazy aerial dance, the spectacle is singularly cheerful. Thus, and in many other ways, Nature provides us with cheering trifles which often enliven the mind when there is nothing else at hand to break the gloom or divert the thoughts. A sparkling crystal, a sweet flower, a gay bird, a child's song, will often create thoughts which will flit with cheerful brightness

across man's melancholy mood, and make him grateful for the  
 • • diversion which they have afforded to his musings. RO.

**Circumstantial Men.**—The independent man has an appearance which marks him off from the things which surround him. But the circumstantial man takes his color entirely from the present circumstances. You notice them, but you might pass him unobserved. He cannot be said exactly to have lost his individuality, but he has abandoned all those evidences by which it is usually indicated. He may have his party colors, but he selects those which are so common as to prevent his ever being distinguished by them anywhere. He is like the caterpillar of a moth (*Noctua algæ*) which assumes the color of the lichens upon which it feeds, being gray when it feeds on a gray one (*Parmelia saxatilis*), and always yellow when it feeds on a yellow one (*Cetraria juniperina*). Or like the caterpillar of the coronet moth (*Acronycta ligustri*), which feeds upon the privet, and is so exactly of the color of the under side of the leaf, to which it usually clings during the day, that a person may have the leaf in his hand without discovering the caterpillar. P.

**Circumstances, Accommodation to.**—Plants continue closed through the night. Morning brings them recruited vigor, expanding their leaves and flowers to the fullest extent. It has been found, however, that the *Leguminosæ*, placed in a room from which daylight was rigidly excluded, and where they were subjected to artificial light at night, have, after a short period of indecision, been brought to conform to this altered condition, and have closed their leaves during the darkened day, and expanded them at night. MAR.

**Circumstances, Independent of.**—Nature sometimes creates minds which seem independent of circumstances. She also creates other things which appear to be equally so. Take one example. Owing to their geographical position, the central and western regions of South Africa are almost constantly deprived of rain. They contain no flowing streams, and very little water in the wells. The soil is a soft and light-colored sand, which

reflects the sunlight with a glaring intensity. No fresh breeze cools the air; no passing cloud veils the scorching sky. We should naturally have supposed that regions so scantily supplied with one of the first necessities of life could be nothing else than waste and lifeless deserts: and yet, strange to say, they are distinguished for their comparatively abundant vegetation, and their immense development of animal life. The evil produced by want of rain has been counteracted by the admirable foresight of the Creator in providing these arid lands with plants suited to their trying circumstances. The vegetation is eminently local and special. Nothing like it is seen elsewhere on the face of the earth. Nearly all the plants have tuberous roots, buried far beneath the ground, beyond the scorching effects of the sun, and are composed of succulent tissues, filled with a deliciously cool and refreshing fluid. They have also thick fleshy leaves, with pores capable of imbibing and retaining moisture from a very dry atmosphere and soil; so that if a leaf be broken during the greatest drought, it shows abundant circulating sap. Nothing can look more unlike the situations in which they are found than these succulent roots, full of fluid, when the surrounding soil is dry as dust, and the enveloping air seems utterly destitute of moisture; replete with nourishment and life when all within the horizon is desolation and death. They seem to have a special vitality in themselves; and, unlike all other plants, to be independent of circumstances. B.

**Circumstances, Power of Utilizing.**—Humming-birds, colibris, and their brothers of every hue, live with impunity in the fearful forests where tropical Nature, under forms oftentimes of great beauty, wages her keenest strife in those gleaming solitudes where danger lurks on every side: among the most venomous insects, and upon those most mournful plants whose every shade kills. One of them (crested, green, and blue), in the Antilles, suspends his nest to the most terrible and fatal of trees, to the specter whose fatal glance seems to freeze your blood forever, to the deadly manchineel. It is this parakeet which boldly crops the fruits of the fearful tree, feeds

upon them, assumes their livery, and appears from its sinister green to draw the metallic luster of its triumphant wings. Life in these winged flames, the humming-bird and the colibri, is so glowing, so intense, that it dares every poison. They beat their wings with such swiftness that the eye cannot count the pulsations; yet meanwhile the bird seems motionless, completely inert and inactive. Leaves, as we know, absorb the poisons in the atmosphere; flowers exhale them. These birds live upon flowers, upon these pungent flowers, on their sharp and burning juices—in a word, on poisons. From their acids they seem to derive their sharp cry, and the everlasting agitation of their angry movements. That part of the earth where man perishes or decays is the scene of triumph of the bird, where his extraordinary pomp of attire, luxurious and superabundant, has justly won for him the name of bird of paradise. It matters not! Whatever their plumage, their hues, their forms, this great winged populace, the conqueror and devourer of insects, and, in its stronger species, the eager hunter of reptiles, sweeps over all the land as man's pioneer, purifying and making ready his abode and rendering practicable the entrance to this dangerous fairy-land. Nature endows the birds, as she also endows men, with a marvelous capacity of accommodation to circumstances. Beautiful birds are not made out of what we should consider wholesome food, and beautiful characters are not made out of the choice events of human history. Nature supplies us with an appropriate power whereby we transmute everything to the purposes which she intends us to serve. We see what the birds can do with poison. We know to what splendid purposes genius has been able to turn poverty, jails, cruelty, persecution, and torture. Some of the finest characters in history have been reared by, and flourished upon, these unpromising elements. We degrade not ourselves and our purposes to circumstances, but utilize circumstances for our necessities and purposes. The bird does not take the poison and submit to death: it transmutes it into life and beauty. The hero does not let circumstances subdue him: he makes circumstances subserve the growth of his character.

**Circumstantial Evidence, A Hint Respecting.**—It is impossible to be too wary in our reception of circumstantial evidence. Countless errors are committed through that class of evidence being accepted without proper inquiry. Let us illustrate this by a reference to conchology. Generally when a shell is found on our shores, it is presumed to be a genuine American species and is classified as such ; on the same principle that any plant, insect, reptile, bird, or mammal is considered as indigeneous if it be discovered in a living state within our waters. But this ought not to be the case with shells. A collector might discover some spot on our coast which was rich in shells hitherto excluded from the American list, and yet be entirely mistaken if he were to consider them as true inhabitants of our shores. The fact is, that great quantities of shells are often conveyed from one country to another among the ballast, and when the sailors throw away the ballast overboard, they also fling into the sea various shells among the stones and sand. These shells are subsequently washed up by the tides, or dashed on the shore in a storm, so that they are picked up by hand, or inclosed in the multifarious contents of a dredge. Sometimes, too, a ship in ballast is cast upon the shore and beaten to pieces by the waves, when the ballast is necessarily thrown out, and in a year or two becomes a part of the shore. In this way many enterprising collectors have been deceived, and their mistake has not been discovered until many years afterward.

C. S.

**Civilization a River.**—In its influence upon barbarism, and in its fructifying, fertilizing movement throughout the world, civilization resembles a beneficent river in a desert land. We may compare it, for example, to the Nile. The ancient Egyptians looked upon their country as a gift from the river, whose periodical inundations yearly deposit on the soil a new layer of that fertile mud to which the land of the Pharaohs owes its proverbial fecundity. Fluvial deposits, by their gradual accumulation through a long series of years, have constituted immense masses and entire strata of soil. Egypt, in fact, was conquered

from the desert by the river. "The world," says Miss Martineau, "has seen many struggles, but no other so pertinacious, so perdurable, and so sublime as the conflict of these two great powers. The Nile, ever young, because perpetually renewing its youth, appears to the inexperienced eye to have no chance, with its stripling force, against the great old Goliath the desert, whose might has never relaxed from the earliest days till now; but the giant has not conquered it." The river has completed its mighty task; as civilization, in due time, will accomplish hers.

MY.

**Climate and Character.**—The disposition of the animal seems not less marked by the climate than the figure. Both at the Line and the Pole the wild quadrupeds are fierce and untamable. Africa has ever been remarkable for the fierceness of its animals: its lions and its leopards are not less terrible than its crocodiles and its serpents; their dispositions seem entirely marked with the rigors of the climate; and being bred in an extreme of heat, they show a peculiar ferocity that neither the force of man can conquer nor his arts allay. The food also is another cause in the variety which we find in quadrupeds of the same kind. Thus the beasts which feed in the valley are generally much larger than those which glean a scanty subsistence on the mountain. Such as live in the warm climates, where the plants are much larger and more succulent than with us, are equally remarkable for their bulk. The ox fed in the plains of Hindustan is much larger than that which is more hardily maintained on the sides of the Alps. The deserts of Africa, where the plants are extremely nourishing, produce the largest and fiercest animals. But it is not only in the case of the lower animals that we see the omnipotent influences of climate upon character, for those same influences are observable in mankind. The color, the form, the pursuits, the habits, the diseases, and the religions of men are often the result of climate. This being so, we ought to correct some of those bigoted judgments which we are too prone to pronounce upon the ways of other nations when they differ from our own. A.

**Climate on Intellect and Morals, The Effects of.**—It may startle to declare that the intellect and even the morality of peoples have hitherto been wonderfully affected by climate. The Laplanders inhabit the northernmost coasts of the Scandinavian peninsula. They are ignorant, uncultivated, and *torpid* rather than savage. In spite of their frequent contact with the Russians and the Swedes, they have no industrial resources, no art, no other commerce than that which is afforded by the products of the chase, of their fisheries, or their herds of reindeer. Christianity, to which they were converted about two centuries ago, has not aroused them as yet from their moral and intellectual lethargy. All religion being reduced, so far as they are concerned, to oral tradition, the devotion of each is in proportion to his memory. Education among them has attained to this standard, that a Laplander who knows his alphabet corresponds to a young man among us who has graduated at Harvard or Yale.

D.

**Colony Wisely, How to Inaugurate a.**—At certain periods of the year the penguins assemble on the beach as if they preconcertedly met for deliberation. These assemblies last for a day or two, and are conducted with an obvious degree of solemnity. When the meeting results in a decision, they proceed to work with great activity. Upon a ledge of rock, sufficiently level and of the necessary size, they trace a square with one of its sides parallel and overlooking the edge of the water, which is left open for the egress of the colony. Then with their beaks they proceed to collect all the stones in the neighborhood, which they heap up outside the lines marked out, to serve them as a wall to shelter them from the prevailing winds. They afterward divide the inclosure into smaller squares, each large enough to receive a certain number of nests, with a passage between each square. ¶ No architect could arrange the plan in a more regular manner. What is most singular is that the albatross, a bird essentially aerial and adapted for flight, associates at this period with these half-fish, half-birds, the penguins; so that the nest of an albatross may be seen next the nest of a



penguin, and the whole colony, so differently constituted, appears to live on the best terms of intimacy. Each keeps its own nest. Other sea-birds come to partake of the hospitality of the little republic. With the permission of the masters of the coterie they build their nests in the vacancies that occur in the squares. Now, if we contrast the way in which these birds inaugurate their colony with that which is often pursued by mankind, we shall find that the former exhibit quite as much wisdom as the latter, and perhaps more so. For instance: before the birds start they have an open assembly of all those who are interested in the question. There is no limitation of the franchise. When they meet there is no hurry and no wrangling; their whole demeanor is that of deliberation. After coming to a decision they act upon it. The conference does not end in sentiment; it results in most systematic work—work undertaken and carried out without any further hesitation or planning. Then, having effected their own arrangements, they proceed upon a liberal policy toward other tribes. They are not arbitrary, aggressive, or exclusive. They freely allow others to come and take up their residence with them. The result of all this wisdom is a happy and prosperous community. When modern men colonize, they are apt to pass swaggering resolutions at big assemblies, and with much noise to proceed to their work with the Bible in one hand and murderous weapons in the other. They bluster about their rights and are intolerant of the existence, anywhere near them, of even the men whose land they have taken for their colony. It is a question whether, with all their shrewd policy and their stupendous and unscrupulous use of brute force, they are as successful or happy as they might be if they learned their colonization catechism from the penguins.

RE.

**Colored by our Associations.**—Although the natural hue of the pholas (boring-shell) is white, it is often stained with the color of the substance in which it is embedded; and when it lives in the red sandstone, the red is often so deep that it might easily be taken for the natural color of the shell. Like

the stock-jobber on the Exchange, the man at the clubs, or the conventional religionist, the pholas is toned by its associations, and cannot preserve an independent color. C. S.

**Colossal Works Unconsciously Achieved.**—When the sea has left a coral reef for some time it becomes dry, and appears to be a compact rock, exceedingly hard and rugged; but no sooner does the tide rise again, and the waves begin to wash over it, than millions of coral worms protrude themselves from holes on the surface which were before quite invisible. The growth of coral ceases when the worm which creates it is no longer exposed to the washing of the tide. Thus a reef rises in the form of a gigantic cauliflower, till its top has gained the level of the highest tides, above which the worm has no power to carry its operations, and the reef, consequently, no longer extends itself upward. # The surrounding parts, however, advance in succession till they reach the surface, where they also must stop. Thus, as the level of the highest tide is the eventual limit to every part of the reef, a horizontal field comes to be formed coincident with that plane, and perpendicular on all sides. The reef, however, continually increases, and, being prevented from going higher, extends itself laterally in all directions. The nature of the coral worm does not permit of its working in any other way, and thus, without any design on its part, the necessary result of its activities is the accomplishment of grand results. It is more than probable that the human race are, in like manner, working out some grand design of the great Architect of the universe, of which they have no more an adequate conception than the coral worm has of the fact that it is engaged in making an island. MY.

**Combination of Utility and Beauty, A.**—Sometimes we meet a man whose character is as beautiful as his versatile abilities are useful. We are amazed almost at the many different ways in which our admiration is challenged by the variety of his valuable works and accomplishments, and the diversity of uses to which his great powers may be applied. He re-

minds one of that native tree of South America, the papaw. Its splendid appearance resembles the palm. But it has more than mere beauty of form. It is embellished with luxuriant yellow fruit; and this fruit, besides being savory and aromatic, has many extremely remarkable properties. Its milky juice exhales, when burned, an ammoniacal odor, and chemical analysis has recognized therein the presence of *fibrine*. Mix some of this juice in water, plunge into the mixture fresh hard meat, and in a few minutes it will become exquisitely tender. The very exhalations of the tree operate in the same manner, and the inhabitants of the regions where it flourishes suspend to its branches such meat and poultry as they wish to soften. Wondrous combination of beauty and utility !

D.

**Combination is Strength.**—The house-martin (*Chelidon urbica*), a common summer visitor to all parts of Europe, seems quite to understand that combination is strength. These birds possess some sort of intelligence with each other which enables them to combine their efforts to effect some desired purpose. Dupont de Nemours says: "I once saw a martin which had unfortunately, I know not how, caught its foot in the running knot of a thread, the other end of which was attached to a gutter of the Collège des Quatre Nations. Its strength being exhausted, it hung and cried at the end of the thread, which it raised sometimes by trying to fly away. All the martins of the great basin between the bridge of the Tuileries and the Pont Neuf, and perhaps from a still greater distance, collected to the number of several thousands. They formed a cloud, all emitting cries of alarm and pity. After much hesitation and a tumultuous consultation, one of them invented a mode of delivering their companion, made the others understand it, and commenced its execution. All those that were within reach came in turn, as if running at the ring, and gave a peck to the thread in passing. These blows, all directed upon the same point, succeeded each other every second, or even still more frequently. Half an hour of this work was suffi-

cient to cut through the thread and set the captive at liberty." No union of men for a common purpose could more completely illustrate the truth that combination is strength. MU.

**Combination and Recombination: Principles of Nature.**—It is noticeable that, in human society, individuals rarely have any independent action. Men combine into sects and parties, or cliques or partnerships, dissolve their associations and recombine again, in order to carry on the affairs of the world. Isolated action is seldom seen. It is remarkable of the simple substances that they also are generally in some compound form. Thus oxygen and nitrogen, though in mixture they form the ærial envelope of the globe, are never found separate in Nature. Carbon is pure only in the diamond. And the metallic bases of the earths, though the chemist can disengage them, may well be supposed unlikely to remain long uncombined, seeing that contact with moisture makes them burn. Combination and recombination are principles largely pervading Nature. There are few rocks, for example, that are not composed of at least two varieties of matter, each of which is again a compound of elementary substances. What is still more wonderful with respect to this principle of combination is that all the elementary substances observe certain mathematical proportions in their unions. When in the gaseous state, one volume of them unites with one, two, three, or more volumes of another, any extra quantity being sure to be left over, if such there should be. Combinations by weight are also governed by fixed and unchanging laws of the greatest beauty and simplicity. It is hence supposed by some that matter is composed of infinitely minute particles or atoms, each of which, belonging to any one substance, can only (through the operation of some as yet hidden law) associate with a certain number of the atoms of any other. There are also strange predilections among substances for each other's company. One will remain combined in solution with another, until a third is added, when it will abandon the former and attach itself to the latter. A fourth being added, the third will perhaps leave the first and

join the new-comer. The extent to which this law of combination operates in human society, and has operated since the beginning of the world, is obvious. VE.

**Combination, Results of Right.**—The lovely and fragrant rose is composed of no more than a little carbon and water, some ammonia, and perhaps some iron superadded; and when disintegrated in the chemist's laboratory, can be presented as a few grains and drops of colorless relic. TH.

**Commerce the Great Uniter.**—Diversity of climate and season—of summer and winter—over the globe has produced for man's advantage a corresponding variety of animal and vegetable life. Man himself has an organic strength which enables him to exist in every clime; but other animals and all plants have a more limited geographical distribution, and are endowed with constitutions which enable them to thrive in certain regions only. By means of commerce, however, the shortcomings of one climate are happily supplemented by the riches of another, and all the most useful productions growing upon the earth are thus more widely scattered. The necessary interchange fulfils its purpose of knitting the whole world together in bonds of mutual dependence; and the man, or set of men, who would restrict commerce between the various countries have obviously failed to understand one of the greatest and most important of Nature's designs. BE.

**Commotion, The Advantages of a.**—A political commotion often does immense service in clearing the moral atmosphere of its corruption. A religious commotion is often of incalculable value in driving away cant, hypocrisy, priestcraft, and fraud. These things may be well illustrated by a storm of wind. It is often observed that storms are followed by a sensible improvement in the air, and by a feeling of increased comfort; hence it may be inferred that they are sent to cure something going wrong in Nature's household. We know that the storm frequently checks the pestilence when human skill fails. On the banks of La Plata in South America, there is a wind which comes charged with the germs of intermittent fever from

the marshes lying to the north. The wretched inhabitants droop and sicken and shiver into their graves. Suddenly a hurricane sweeps across the pampas from the cold summits of the Andes in the southwest, and in a few days the seeds of the disease are roughly yet effectually expelled by its searching force. Cholera epidemics in this country have usually been attended with great stillness in the atmosphere, by which the operation of causes tending to concentrate the poison was no doubt favored. Therefore when we hear the stormy wind howling round our houses, or sweeping through courts and streets, let us think of it as one of Nature's most efficient sanitary agents, by which she renovates the air, tainted through stagnation, and destroys the seeds of the pestilence that were growing up for our destruction. BE.

**Compensation, The Law of.**—The makers of nice astronomical instruments, when they have put the different parts of their machine together and set it to work, find, as in the chronometer for instance, that it is subject in its performance to many irregularities and imperfections—that in one state of things there is expansion, and in another state contraction among cogs, springs, and wheels, with an increase or diminution of rate. This defect the makers have sought to overcome, and, with a beautiful display of ingenuity, they have attached to the works of the instrument a contrivance which has had the effect of correcting these irregularities, by counteracting the tendency of the instrument to change its performance with the changing influences of temperature. This contrivance is called a *compensation*, and a chronometer that is well regulated and properly compensated will perform its office with certainty, and preserve its rate under all the vicissitudes of heat and cold to which it may be exposed. In the clockwork of the ocean, and the machinery of the universe, order and regularity are maintained by a system of compensations. A celestial body as it revolves around its sun flies off under the influence of centrifugal force; but immediately the forces of compensation begin to act, the planet is brought back to its elliptical path, and held

in the orbit, for which its mass, its motions, and its distance were adjusted. Its compensation is perfect. T.

**Compensation in Modes of Power.**—If an insect's power of flying is not considerable, its power of traction and propulsion are immense compared with the vertebrate animals, and in the same group of insects those that are the smallest and lightest are the strongest. The proportion between the muscular strength of insects and the dimension of their bodies would not appear to be on account of their muscles being more numerous than those of the vertebrate animals, but on account of greater intrinsic energy and muscular activity. I.

**Compressibility, The Limits of.**—Compressibility is the property in virtue of which the volume of a body may be diminished by pressure. This property is at once a consequence and a proof of porosity. Bodies differ greatly with respect to compressibility. The most compressible bodies are gases: by sufficient pressure they may be made to occupy ten, twenty, or even a hundred times less space than they do under ordinary circumstances. In most cases, however, there is a limit beyond which, when the pressure is increased, they become liquids. The compressibility of solids is much less than that of gases, and is found in all degrees. Stuffs, paper, cork, woods, are among the most compressible. Metals are so also to a great extent, as proved by the process of coining, where the metal receives the impression of the die. Here also there is in most cases a limit beyond which, when the pressure is increased, bodies are fractured or reduced to powder. So, too, with bombastic sermons, and with sensational newspaper articles. Compression reduces the former into sentimental drivel, and the latter into intellectual dust.

EL.

**Conduct Shaped by Constitution.**—Among the Albinos of the Isthmus of Darien, the practice of sitting up at night and sleeping in the day is prevalent. Speaking of them, Wafer, an old traveler, says: "They see not well in the sun, their eyes being weak and running with water if the sun shines toward them, so that in the daytime they care not to go abroad, unless

it be a cloudy, dark day. But notwithstanding their being thus sluggish and dull in the daytime, yet when moonshiny nights come they are all life and activity, running about in the woods and skipping about like wild bucks, running as fast by moonlight even in the gloom and shade of the woods as the other Indians do by day." s.

**Congregational Union, A.**—Congregationalism reminds one, said the Rev. T. T. Lynch, of what the naturalists sometimes talk about, and a queer thing it is. √There is a composite creature called the king-rat. It is not common, but it is to be seen in certain museums. It appears that rats, which are very fraternal creatures after a fashion, associate with one another in such a way that their tails get fastened together, and there are sometimes as many as twenty rats making up one king-rat. Their heads are all stretched outward in a circle, and their tails all compacted and agglutinated together, nobody exactly knows how. Congregationalism is very much like that. All the tails are agglutinated together; it is a compound creature, the heads all outward ready to run different ways, the tails amalgamated in this queer fashion, so that no individual can move freely, and neighbors hamper instead of helping one another. Behold in figure a Congregational Union! T. L.

**Conscience, The.**—The hour of the day can be told between the tropics by the motion of the magnetic needle as well as by the oscillations of the mercury in the barometer, the mysterious march of the needle being equally influenced by the course of the sun and change of place upon the earth's surface. There are regions of the earth where the seaman, enveloped for days in fog, without light of the sun or stars, without all other means of ascertaining the time, can still accurately determine the hour by the variation of the dip of the needle, and know whether he be to the north or south of the part toward which he would steer his course. And does not every enlightened man carry with him an inward monitor which, in like manner, enables him rightly to steer his course amid all the conflicting



expediciencies and surging tempests of his daily life? Whether it be called conscience matters not. We are not concerned about the name when we are conscious of the power. That power we know exists, and is our safe regulator and unfailing guide in all our experiences on life's changeable sea. K.

- **Conscious Strength Despises Tricks.**—There are many little birds which, in order to decoy aggressors away from their nests, are obliged to resort to tricks of deceit which are often successful. Large birds, like great souls, despise tricks, and rely solely upon their strength. The swan is a good illustration of this. Swans care but little for concealing their broods, as they feel confident of their power to protect them against every enemy. They will fight even with the eagle itself, harassing it with beak and wings until the marauder is glad to make a more or less honorable retreat. In the protection of their young they display extraordinary courage and resort to no stratagem. As it is always gratifying to see courage conquer cunning, it is interesting to know that even foxes are sometimes killed by them. Z  
RE.

**Consumption without Proportion.**—Some caterpillars daily eat double their weight in food; a cow eats forty-six pounds daily, and a mouse eats eight times as much in proportion to its own weight as is eaten by a man. ‡ This consumption without proportion is a wonderful fact, and we may recognize its operation among mankind. We need not confine our view to princelings or courts to discover men who are constantly consuming that which we should have judged was out of all reasonable ratio to their needs. One man absorbs the emoluments of pensions and sinecures the value of which would make whole villages happy; the rent-roll which another appropriates would furnish substance for victualing an entire city. In contemplating such a spectacle, which coexists with the poverty and suffering of a portion of mankind, we may consider we have indeed discovered an anomaly; for this gigantic-personal-appropriation order of men cannot, in defense, require that we place them in

the same list with the cow, the mouse, and certain caterpillars—for the simple reason that these creatures are obeying the natural law which applies equally to all their kind. PH.

**Contrariety in Character.**—The quick and sprightly eye of the swallow, the ever-twittering voice, now a low plaintive cry, and now a gay shrill scream, all denote a being of marked character. And this character is strange enough; it might be termed a psychological riddle. For while the swallow builds her nest confidingly and with domestic quiet beneath man's roof, beside his hearth even, she at the same time pursues her noisy journeys and gives way to her love of unrestrained and aimless wandering. While she, on the one hand, carries her vaunted cleanliness to wearisome punctuality, she, on the other, builds up the walls of her dwelling with dirt and mud. She is an illustration of that contrariety in character which is exhibited by so many of the human family. ST.

**Contrast, Things Appreciated by.**—We appreciate things by contrast. For example, nowhere, from the force of contrast, is summer more brilliantly joyous or its approach welcomed with greater delight than in polar regions, where amid perennial frost and snow winter seems to be enthroned forever. The long-continued night, after passing through a tedious dawn, at length opens into that bright, brief interval, in which spring, summer, and autumn are blended into one. In rays of warmth the sun sends forth her signal and Nature answers to the call. As heat increases, the solitude once more shows signs of life and movement. The frozen lumps and ledges covering the sea begin to strain and crack and split asunder, and glacier masses breaking loose from their icy cables yield themselves up to the current and to the wind. Creatures that have long been slumbering in caves, or amid the snow, now shake off their torpor. The short thick grass and moss spread their carpet of green over every sheltered nook from which the snow has melted, and the rest of the scanty but often brightsome flora of remotest North puts on with marvelous rapidity its summer aspects.

Here is indeed a scene which, by contrast, can be well appreciated. Spenser in his "Faerie Queene" indicates others:

"Sleepe after toyle,  
Port after stormie seas,  
Ease after warre,  
Death after life,  
Doth greatly please."

BE.

**Conventional Opinion.**—The clearest proofs abound that in numberless cases rivers have simply availed themselves of the courses prepared for them by previous breaks in the rocks, opening depressions along which the waters have passed. Take one of the largest of European streams, the Danube, and trace it from its source in the flat plateaus of Central Germany in which it rises, and you see that while it never can have been a torrential stream, it simply maintains a steady slow-flowing current as it winds through the steep defiles and high cliffs of the hardest gneiss and granite which had been opened out to receive it; for even now, where the gorges are deepest and narrowest, and where the river must therefore have exerted its greatest power, the buildings of Roman times have been daily bathed by the stream, and not a fragment of them has been worn away. When, indeed, we look to the lazy-flowing, mud-collecting Avon, which at Bath passes along that line of valley, how clearly do we see that it never deepened its channel! Still more when we follow it to Bristol and observe it passing through the steep gorge or hard mountain limestone at Clifton, every one must then be convinced that it never could have produced such an excavation. In fact, we know that from the earliest periods of history it has only accumulated mud, and has never worn away any portion of the rock. The clear inference then, in these and countless other instances, is that rivers in all such cases simply flow in the gorges and depressions prepared for them by previous geological conditions. They resemble the serene movement of conventional opinion as it flows through society. It never cuts out for itself an independent

course, never invents a new turn or change, never removes any objectionable impediment. It flows torpidly along the old channels which superstition has made convenient for it. Its history is altogether unlike that of the current of sincere thought, which, bursting up from the deep wells of truth, carves its own way through every obstruction, however mighty, and accomplishes its destiny without any adventitious aid. SI.

**Convulsive Action, Evils Attendant on.**—Convulsions, whether religious, political, or material, are attended with alarming contingencies. For instance: rivers are stated to have sometimes run dry during earthquakes, and again begun to flow after the shock. This is presumed to arise either from the transit of an earth-wave along their courses up-stream, thus damming off their sources, or from sudden elevation of the land and as sudden depression. In like manner, in times of religious revivals common sense and reason are often dammed completely up, and the wild tide of fanaticism rushes over everything; while in political convulsions the liberty of the press and of the subject are either elevated in a manner absolutely dangerous to any community, or crushed into depths which plunge a country into despair. In point of fact, all sorts of convulsions are attended with all sorts of inconveniences and dangers; and no sensible man, however anxious for any change, would in the face of facts wish for it to be effected by that kind of phenomena. MA.

**Counterfeiting, The Power of.**—Montaigne records some singular instances of counterfeits which were followed by sad realities. We have, on the other hand, to notice very often in the present day counterfeits which escape punishment. People counterfeit sickness and piety, and are most successful. They are equal to the fox in their power to sham. One of the most frequent stratagems of the fox, and which denotes an extraordinary amount of intelligence, consists in simulating death when surprised by the hunters and there is no hope of safety by flight. It may then be handled, kicked about in every direction, even lifted by the tail, hung up in the air, or carried thrown over

one's shoulder, without showing the slightest sign of vitality. But as soon as released and opportunity for escape offers, it will decamp with all haste, to the great amazement of those so cleverly duped. M.

**Cowardice, The Tactics of.**—Cowards are like cats. Cats always take their prey by springing suddenly upon it from some concealed station, and if they miss their aim in the first attack, rarely follow it up. They are all accordingly cowardly, sneaking animals, and never willingly face their enemy unless brought to bay or wounded, trusting always to their power of surprising their victims by the aid of their stealthy and noiseless movements. ND.

**Cowards, The Insolence of.**—In the Western States there exists a very curious species of rodents, belonging to the subgenus *Spermophilus* or *Spermatophilus*, that is, grain-eaters. They are better known by the hunter's name, prairie-dogs. The Hon. C. A. Murray, in his "Travels in North America," remarks that their number is incredible, and their cities (for they deserve no less a name) full of activity and bustle. They seem on the approach of danger always to retire to their own homes; but their great delight apparently consists in braving it with the usual insolence of cowardice when secure from punishment; for as you approach they wag their little tails, elevate their heads, and chatter at you like a monkey, louder and louder the nearer you come; but no sooner is the hand raised to any missile, whether gun, arrow, stick, or stone, than they pop into the hole with a rapidity only equaled by that sudden disappearance of Punch with which when children we have been so much delighted. D.

**Crafty, The Tricks of the.**—You cannot do business with the crafty bad man with any safety. You may take what you consider guaranties and securities for his appearance at the right time to perform the agreement that he has made with you, but somehow or other you cannot hold him even in this way. Subtle and deceitful, he contrives to slip away at the moment you thought him secure. He represents honor and

truth as being parts of himself, but somehow or other he is not detained when you want him by the one or the other. He eludes you like the glass-snake, which, when pursued and touched, will contract the muscles of its tail with such excessive force as to snap off that member, or will even divide itself into two or more pieces, and thus uncatchable will then glide away from even these parts of itself into some place where its snake life can recuperate itself in safety. The tricks of this man and the movements of this snake warn us to avoid alike the biped and the reptile. IL.

**Crafty Rogue, The.**—To what shall we compare that crafty rogue who, either in the character of a cunning director of bubble companies, or in that of a jobbing promoter of impossible undertakings, or in that of a plausible trickish attorney, gives himself up to the work of entrapping his fellow-men that he may ruin them for his own benefit? He is similar to that elegant dragon-fly-like insect, the ant-lion (*Myrmeleon formicarius*), which is found in the environs of Paris. Its larvæ are met with in great abundance in sandy places very much exposed to the heat of the sun. There they construct for themselves a sort of funnel in the sand, by describing backward the turns of a spiral whose diameter gradually diminishes. Their strong square head serves them as a spade with which to throw the sand far away. They then hide themselves at the bottom of the hole, their head alone being out, and wait with patience for some insect to come near. Scarcely has the ant-lion perceived its victim on the borders of its funnel when it throws at it a shower of dust, to alarm it and make it fall to the bottom of the precipice, which does not fail to happen. Then it seizes it with its sharp mandibles and sucks its blood, after which it throws its empty skin out of the hole and resumes the lookout. When this larva reaches perfection it takes wings, and it diffuses an odor of roses not suggestive of pitfalls or tricks, but very pleasant—as are the varied elegances which, when rising into fashion and success, the human crafty rogue displays. I.

**Credit Wrongly Ascribed.**—When a New Zealander has

received a gunshot or other injury, the priest prays over him, the wound is frequently washed, and all extraneous substances are removed, and no external application is used but water. The invocations of the priests to the spirits are repeated occasionally during the time. No married man or woman (excepting his own wife) is permitted to see the patient during his illness, from a superstitious idea that the spirits would be angry and retard the cure. The excellent constitutions of the natives prevent any unfavorable result, and they recover from most serious injuries in a short time. But the priest gets the credit for having moved the spirits by his prayers, just as in America some fanatics get credit for having moved the Almighty to effect cures which would have been accomplished entirely without their intervention.

GA.

**Crises and the Crisis, The.**—We have many changes in life, but after all not, perhaps, so many as caterpillars. For the life of a caterpillar seems one continued succession of changes, and it is seen to throw off one skin only to assume another, which also is divested in its turn, and thus for eight or ten times successively. We must not, however, confound this changing of the skin with the great metamorphosis which it is afterward to undergo. The throwing off one skin and assuming another seems in comparison but a slight operation among these animals; this is but the work of a day, the other is the great adventure of their lives. Probably, without heeding the caterpillars, we think too much on the changes through which our life passes. No doubt those changes are important; but surely the metamorphosis of the butterfly into wings is trivial compared with the vastness of that last inevitable transformation which we shall undergo, when all our little crises will end in the great crisis of Being.

A.

**Cultivation, The Effects of.**—What marvelous encouragement man has to work! In all departments of action what splendid results have followed his labor! By what wondrous processes he has been able to develop the beautiful from the crude, the valuable from the worthless! See his work trans-

forming even the vegetation of the globe. It has often been remarked that England does not owe a single useful plant to Australia or the Cape of Good Hope, countries abounding to an unparalleled degree with endemic species, or to New Zealand, or to America south of the Plata, and according to some authors not to America northward of Mexico. Mr. Darwin does not believe that any edible or valuable plant, except the canary-grass, has been derived from an oceanic or uninhabited island. If nearly all her useful plants, natives of Europe, Asia, and South America, had originally existed in their present condition, the complete absence of similarly useful plants in those great countries would indeed be a surprising fact. But these plants have been so greatly modified and improved by culture as no longer to resemble any natural species, and so one can understand why those countries have given her no plants of use to her in her present state of civilization, for they were either inhabited by men who did not cultivate the ground at all, as in Australia and the Cape of Good Hope, or who cultivated it very imperfectly, as in some parts of America. These countries do yield plants which are useful to savage man; and Dr. Hooker, in his "*Flora of Australia*," enumerates no less than one hundred and seven such species in Australia alone; but these plants have not been improved, and consequently cannot compete in England with those which have been cultivated and improved during thousands of years in the civilized world. By proper cultivation they will become able to do so. They may be almost transformed; for by his labor man is able out of the growths of the wilderness to develop the blossoms of the rose.

VA.

**Curiosity Seized as a Snare.**—In the Makololo territories Dr. Livingstone met with numbers of dragon-fly-looking insects, the larvæ of which prey upon ants. These they capture in a peculiar manner. The larva puts its head into a little hole in the ground and quivers its tail rapidly. The ants come near to examine the novel object, and, urged on by curiosity, advance somewhat too closely, when they are suddenly seized by the



forcers or graspers with which the vibratory tail is furnished, and thus are killed. Not only do insects and the lower animals understand that the curiosity of their victims may be effectively employed as a snare for them, but human beings understand and act upon the same principle. How many a young man has been utterly ruined by a vicious thing through adopting the apparently harmless course of "going to see what it was like"! The proprietors of the gaming-tables and the many other depraved resorts of vice have all caught their victims by ensnaring their curiosity. Curiosity is a good servant but a bad master. We should hold its bridle with a firm hand, or it may gallop with us to the point where ruin is ready to clutch us.

I.

**Danger, The Philosophic Way of Meeting.**—The hedgehog upon the approach of any danger rolls itself up in a lump, and patiently waits till its enemy passes by, or is fatigued with fruitless attempts to annoy it. Every increase of danger only increases the animal's precautions to keep on its guard. The dog vainly attempts to bite it, since he thus more frequently feels than inflicts a wound; he stands enraged and barking, and rolls it along with his paws; still, however, the hedgehog patiently submits to every indignity, but continues secure. In this manner the dog, after barking for some time, leaves the hedgehog where he found him, who, perceiving the danger past, at length peeps out from its ball, and, if not interrupted, creeps slowly to its retreat. <sup>hole</sup> Thus, by being patient, wary, and unresentful, the hedgehog escapes all injury. An ill-natured cur under similar circumstances would at least have been bitten and worried by the attacking dog. The very fussiness of his defense would have brought him into peril. The lesson to be learned is that in the presence of danger a purely philosophical defensive policy is the most effective.

A.

**Danger, The Unphilosophic Way of Meeting.**—The earthworm meets threatened danger in a most unphilosophic way. Directly it feels a slight shock in the earth it will hasten to the surface, because it attributes that to the proximity of its enemy

the mole. The knowledge that the worm can easily be panic-stricken has been acquired by the lapwings (*Vanellus*), and these birds use it for their own advantage and the destruction of their victim. The lapwings settle down on fields recently plowed, where they can find an ample supply of worms, and striking against the ground with their feet, induce the worms to come to the surface under fear that the shock is caused by the mole. As fast as the worms come in fear to the surface they are snapped up by the lapwings. Thus by endeavoring to escape an imaginary danger, the worm encounters a real one. There are many creatures, far higher in intelligence than the poor worm, who follow exactly the same panic-stricken policy in the supposed presence of danger. All weak natures, in fact, are naturally impelled to adopt it. Hence among mankind, for want of self-control and discretion, half our miseries, and often our doom, may be traced to acts caused by the dread of a danger which has existed only in our fears.

RE.


**Danger is Slight when Evil is Offensive.**—Gas is a great spoiler of the air; but it has the merit of giving timely warning of the danger by the horrible smell which accompanies its escape. This smell is perceptible when there is only one part in a thousand parts of air; becomes very offensive when the proportion is  $\frac{1}{750}$  or  $\frac{1}{500}$ , and is almost insupportable as the proportion increases. If the gas has escaped from a crack in the pipes, and been allowed to mingle with air in which a free circulation by ventilation is impossible, so that the proportion of gas amounts to  $\frac{1}{11}$ , it explodes on the introduction of a candle. But the reason why this catastrophe so seldom occurs is because the smell of gas is so utterly offensive that the evil demands and receives proper attention long before it reaches danger-point. This fact illustrates very well a great truth in the moral world, namely, that when evil is offensive in itself its danger to the community is slight. In exact ratio to the pleasantness of vice is the danger to be apprehended from it. If gas was not in itself objectionable there would be more ruinous conflagrations.

PH.

**Danger and Finding Death, Escaping.**—We often find men making an attempt to escape from an apparent danger, and by the very act running into a fatal difficulty. They are something like those singular creatures whose habits, and cartilage, batlike wings have obtained for them the name of flying-fish, which the mariner finds after he has passed about the twenty-seventh degree of latitude. When pursued by other fish they fly in shoals out of the water, and, seeking protection, they alight upon the passing ships. As they have no power to take wing again they fall an easy prey to the sailor. ME.

**Dead to the Living, The Ministry of the.**—When, says Louis Figuier, the leaves have performed their functions, when the fruits have appeared, matured, ripened, vegetation has entered into a new phase; the leaves lose their brilliant green and assume their autumnal tint. A certain air of sadness pervades these ornaments of our fields, which proclaims their approaching dissolution. The leaves, withered and deformed, will soon cumber the ground, to be blown hither and thither by the wind. But when separated from the vegetable which has given birth to and matured them, they are not lost to the earth which receives them. Everything in Nature has its use, and leaves have their uses also in the continuous circle of vegetable reproduction. The leaves which strewed the ground at the foot of the trees, or which have been disseminated by the autumn winds over the country, perish slowly upon the soil, where they are transformed into the *humus*, or vegetable mold, indispensable to the life of plants. Thus the *débris* of vegetables prepares for the coming and formation of a new vegetation. Death prepares for new life; the first and the last give their hands, so to speak, in vegetable Nature, and form the mysterious circle of organic life which has neither beginning nor end. When man has performed his functions here and ended his labors, he too fades like the leaf, and is borne away by the cold breeze of death. But like the leaf in death, so man, though dead, ministers to the living. He has not merely consumed so much of the productions of the earth, leaving nothing in return. He

has left behind him his thoughts, his acts, his example, his experiences, written or unwritten, and these will all perform their valuable ministration to the living, as do those leaves of autumn to the younger life which grows over their graves. v.

**Death Better than Starvation.**—Sometimes we hold inquests upon persons who have been destroyed because they would not consent to starvation and to reaching death by that slow process. We are surprised at these suicides, and our comfortable optimists denounce them. But if you rob life of all that is capable of making it worth having, it is not to be wondered at that those who are conscious that this has been done, or is about to be done, do not prize life. Destruction does not in such a case imply brutality. It may indicate great nervousness, fear of the coming ill, or a certain mistaken prudence.  The wasps understand all this quite well. Look at the slaughter which goes on in a wasp's nest at the approach of winter. At first the wasps are remarkably tender toward their offspring. They tend the cells where the eggs are hatched, and they nurse the new-born grubs with a devotion quite equal to that displayed by their more esteemed neighbors the bees. Yet no sooner does the first sharp pinch of frost nip them in the autumn than their whole nature undergoes a change. Their love by some mysterious impulse of instinct is then converted into hate, and falling on the young brood of the nest they ruthlessly destroy them all. But, we may ask, had these grubs been spared, would their fate have been improved? Food was getting scarce and starvation was in immediate prospect. The progeny of a single wasp in spring mounts up to twenty thousand or thirty thousand before the end of autumn, and if most of these were to survive the winter, even supposing there were food for them, it would not be compatible with man's comfort, if even with his existence. BE.

**Death, Anticipating Another's.**—M. D'Orbigny describes the Caracaras of South America as accompanying the traveler throughout the vast solitudes of the South American forests, but never making their appearance until he comes to a halt;

then suddenly he will see these vultures perching upon the trees in his vicinity, and apparently waiting for the remains of his dinner. Mr. Darwin, however, attributes a far less amiable object to these intruders, and regards this conduct on their part as an evidence of their desire to indulge their carrion-eating propensities at the personal expense of the traveler. Of this he says any one may convince himself "by walking out on one of the desolate plains, and then lying down to sleep: when he awakes, he will see, on each surrounding hillock, one of these birds patiently watching him with an evil eye." It is sad to think that there are among men vulture natures which resemble these birds in the eagerness with which they await the death of other people. Under the names, among others, of heir at law, reversioner, residuary legatee, and executor, there are many keen natures perched about in society, watching for death to strike down other individuals whose remains will be enjoyable. Of course they do not let their wishes become known. From a superficial glance at their demeanor you would judge them to be only interested in their friends' dinner-parties. MU.

**Death and Resurrection, Our Daily.**—We die daily. We are constantly returning to the earth the materials we received from it. Every movement of our bodies, every exercise of thought and will, every muscular and nervous effort, is accompanied by a corresponding change in the structure of our frames—exhausts the vitality of so much brain, and nerve, and muscle. Every part of our body is undergoing a process of constant disintegration and renovation; constantly throwing off old effete matter, and constantly receiving deposits of new and living matter. Day and night, sleeping and waking, this ceaseless dying and ceaseless resurrection is going on with more or less rapidity; the river of life flows on, changing its particles, but preserving the same form and appearance. In seven years the whole structure is altered down to the minutest particles. It becomes essentially a different body, though the individual still retains his original form and his personal identity unimpaired. B.

**Death, An Example and an Emblem of.**—Though geographical research has dissipated most of the wild stories formerly accepted in reference to the peculiarly fatal concomitants of the Dead Sea, it well deserves its expressive name. It is a *dead* sea; it has neither the ocean's living movement nor deep-sounding roar; the surf and the spray never sparkle on its rocks; that "multitudinous laughter" which Homer ascribes to the sea is wholly wanting; the wind never wakes a smile on its passive and somber countenance. By its shores one might realize Shelley's mournful wish, and feel

"In the warm air his cheeks grow cold, and hear the sea  
Breathe o'er his dying brain its last monotony."

It is lifeless, untenanted; the fish found there, and brought down by the Jordan, are dead. Unlike the Caspian, it is never stirred by the whirl of wings—by the flight of gulls, or pelicans, or sea-mews. The migratory birds sweep across it without even a pause, without seeking the prey which they could not find. Its waters are denser than those of other seas: their constituents are different, and mingled in different proportions.

D.

**Deceit, Lucrative.**—The fishing-frog is a sluggish fish, and as its ferocious appearance by no means belies its character, it might be supposed that it would have some difficulty in gratifying the enormous appetite which must apparently be associated with such a tremendous mouth. It is said, however, that the fish possesses a stratagem by which to satisfy the cravings of its maw without the necessity of subjecting its unwieldy person to any very violent exertion. On the upper surface of the front of the head are two long movable bony filaments, the foremost of which is dilated at its tip, which has a silvery luster. Lying close to the ground, the fish disturbs the sand or mud so as to obscure the water around it, justly thinking, no doubt, that its appearance is not sufficiently amiable to inspire much confidence in the weaker inhabitants of the deep; it then elevates the filamentous appendages just described, and waves them to

and fro in the water, when the small fishes, which are soon attracted by the hope that this silvery object is something to eat, become instead the prey of their artful foe. This is said to be the ordinary mode of procuring its food followed by this fish: and since it is really a mode of living by deceit, it is to be confessed that the morality of the creature is no better than that of a number of men and women who really make a form of lucrative deceit the work of their lives. NH.

**Deceivers, The Ingratitude of.**—The *Volucella* have a strong resemblance to the humblebee. Certain kinds make use and abuse of this resemblance to introduce themselves fraudulently into its nests and to deposit their eggs therein. When these eggs have hatched, the larvæ, which have two mandibles, devour the larvæ of their hosts the bees. This is the return they make for the hospitality they have received.

I.

**Deep Thought, The Language of.**—Popular ignorance mistakes a bombastic, turbulent, opaque style. It regards it as the emanation of vast depths of thought which are unrevealable. The fact is that such a style can only exist where thought is shallow, and where the products of scholarship have not been assimilated. The style of the deep thinker is clear because he is a deep thinker, and the style of the charlatan is obscure because he is only a charlatan. In deep ocean the water is wondrously transparent. And why? Because the mineral and organic substances which enter into the composition of the ocean waters are so thoroughly incorporated that, far from altering their limpidity, they seem on the contrary to increase it. In certain parts of the Arctic Sea shells are distinctly visible at a depth of four hundred and fifty feet; and in the Antilles, at the same depth, the sea-bed is as distinct as if it were nigh the surface. The sea grows turbid and yellowish only in those regions where its bed is shallow—muddy only where its agitated waves stir up the sand and hold it in suspension. MY.

**Defenseless, A Natural Defense for the.**—There are many kinds of “leaf-rolling” caterpillars, each employing a

different mode of rolling the leaf, but in all cases the leaf is held in position by the silken threads spun by the caterpillar. There are plenty of birds about the trees, and they know well enough that within the circled leaves little caterpillars reside. But they do not find that they can always make a meal on the caterpillars, and for the following reason: the curled leaf is like a tube open at both ends, the caterpillar lying snugly in the interior. So when a bird puts his beak into one end of the tube, the caterpillar tumbles out at the other, and lets itself drop to the distance of some feet, supporting itself by a silken thread that it spins. The bird finds that its prey has escaped, and not having sufficient inductive reason to trace the silken thread and so find the caterpillar, goes off to try its fortune elsewhere. The danger being over, the caterpillar ascends its silken ladder, and quietly regains possession of its home.

CO.

**Degree Makes all the Difference.**—When a substance combines with oxygen, heat is evolved, and if the union is rapid and fussy, light may be emitted as well. The burning of a candle seems to be a very different thing from the rusting of a nail; but in truth the latter process is simply a mild and dilatory species of combustion. It is really a little conflagration, though it does not afford sufficient heat to singe the wings of a moth, or sufficient illumination to enable us to read a line.

PO.

**Delude, Self and Circumstance Conspire to.**—The effects of the mirage are extraordinary, but undoubtedly they are heightened by the imagination of observers, generally over-excited by fatigue, by privations, or sometimes by fever. These causes contribute to vary the nature of the phenomenon as seen by different eyes. Thus some gaze enraptured on verdurous islands, bright as Armida's enchanted garden, with feathery palms, and blooming flowers, and delicious sparkling lakes; others see in that dim far-off which is never reached the laughing waves of the ocean, with ships calmly at anchor, or

“Veering up and down, they know not why,”



and camels browsing quietly upon its shores; others again see before them the rolling river, its banks studded with groves and palaces; and all this while there is not a solitary real object on the horizon whose presence might serve in some degree as a foundation for their visions. It is the very phantasmagoria of Nature—her wildest, most wayward, and most fantastic sport. The reflection of the sky, modified by the inequalities of the soil and the vibratory movements of the air, can alone account for the singular deception. Imagination shows its victim, in the reflected image of the cloudless sky, a sheet of water, which is variously taken for a sea, a lake, or river; it invests the slightest objects on the earth's surface with forms, colors, and dimensions, which are easily metamorphosed into houses, ships, men, animals; and it seems certain that those which in Nubia our fancy converts into camels would in the Soudan be transformed into elephants, and at Venice into gondolas. Imagination makes us its dupes, and gives to airy nothings

“A local habitation and a name.”

It becomes absolutely necessary, therefore, to distinguish these wholly personal illusions born of a heated brain from those which are really due to a definite physical cause. The latter necessarily suppose the existence of *actual objects* below or very little above the horizon. Under such conditions, the most frequent illusion is that which shows the sky or rocks reflected in the expanse of rarefied air superincumbent on the earth's surface, and which through this cause also resembles water. It is then that the ignorant or inexperienced traveler, overwhelmed with fatigue and devoured by thirst, hastens his eager steps to reach more quickly that limpid water where he hopes to refresh and reinvigorate himself, but which flies before his advance, and speedily vanishes altogether. Sometimes it is an inverted representation of terrestrial objects which appears in the air; or rather these same objects, several times reflected, appear to multiply themselves.

D.

**Delusive Daintiness.**—There is a hothouse plant, *Pilea*

*allitrichoides*, of tender, brittle, and juicy aspect, which looks as if it would be good to eat in a cooling salad, but which is really of so explosive a temperament that it might fairly be called the pistol-plant. When near flowering, and with its tiny buds ready to open, if the plant is either dipped in water or abundantly watered, each bud will explode successively, keeping up a mimic Sebastopol bombardment, sending forth a puff of gunpowder smoke or a little cloud of dusty pollen as its stamens suddenly start forth to take their place and form a cross. Some charming acquaintances, whose appearances promise us great pleasure, turn out to be as explosive and delusive as this useless plant. v.

**Democratic Principle, The.**—The political atmosphere is most healthy when composed of a variety of elements. We know that the theory of the philosophical democrat is, that in order to have a perfect political constitution you must have a proper representation of all classes of society. In order that the air should be wholesome it is necessary that it should not be of one kind, but the compound of several substances, and the more various the composition to all appearances the more salubrious. But it is chiefly by the predominance of some peculiar vapor that the air becomes unfit for human support, and a thousand accidents are found to increase these bodies of vapor. Heat may raise them in too great quantities, and cold may stagnate them. Minerals may give off their effluvia in such proportion as to keep all other kind of air away; vegetables may render the air unwholesome by their supply; and animal putrefaction seems to furnish a quantity of vapor at least as noxious as any of the former. All these united generally make up the mass of respiration, and are when mixed together harmless; but any one of them for a long time singly predominant becomes at length fatal. In like manner it is maintained that society is most safe and most healthy when, on the one hand, no one class is unduly powerful, and when, on the other, no class is unfairly lessened in influence: and that because the objectionable qualities of each are balanced by the compensat-

ing ingredients of all, it is desirable to preserve to them severally their natural influence and scope, and perfect freedom to insure vitalizing action.

A.

**Depravity, The Specious Appearance of Moral.**—A species of very destructive blasting is known to the farmer under the name of *bunt*, and to the botanist as *Ustilago fetida*, on account of the intolerable odor which it exhales. It is one of the most common diseases to which wheat is subject. Scarcely a field is free from its attacks; and in favorable circumstances it spreads widely and proves very destructive. It confines its ravages entirely to the grain. Externally the infected ear presents no abnormal appearance. There is no black dust, no stunted growth or malformation by which the presence of the insidious foe may be recognized. On the contrary, the infected ears continue growing, and appear even plumper and of a richer and darker green than the sound ones. The very stigmata of the flowers remain unaltered to the last. Stealthily and secretly the process of poisoning is accomplished; and not in many cases till the harvest is reaped and the wheat ground for flour is the discovery made by the odor and color that the produce is unfit for human food. Under this external mask of health all fecundation is rendered impossible; there is no development of the parts of fructification; no embryo whatever can be detected; the whole interior of the seed when broken and bruised is found to be filled with a black fetid powder, which contains on chemical analysis an acrid oil, putrid, gluten, charcoal, phosphoric acid, phosphate of ammonia and magnesia, but no traces of starch, the essential ingredient in human food. Certain sections of society are blasted by a moral depravity which this “bunt” typifies. Externally, the persons affected appear to be as honorable and respectable as the best of the world. Sometimes, indeed, they appear to be the most Christian of the Christian. But there is no germ of moral goodness in them. Under the mask of social propriety there is moral blackness. The infection of their wickedness rapidly spreads all around them. Yet it is often neither seen

nor suspected by the ordinary observer. But when the preacher of the gospel goes forth to "gather in his sheaves," the disappointing discovery is made that there is no moral harvest to be rejoiced over, but a disheartening spectacle of moral waste and worthlessness to be deplored.

B.

**Desolation.**—There are epochs in some men's lives when faith, hope, and happiness all vanish, and the human mind, driven into gloom, experiences the awful sense of desolation. This mournful mood of soul has its symbol in the "Desolate Sea." In the angle comprised between Humboldt's current and the warm artery which flows to meet it from the center of the Pacific, there exists a vast area, a liquid desert of sinister aspect, desolate and barren, where nothing lives or moves, and which seems stricken with an eternal curse. "The motionless sea," says Felix Julien, "seems here deserted and abandoned. No whale ever furrows its waves; no halcyon or petrel ever skims its surface. All the logs of ships and all the narratives of voyagers agree in representing in the same dreary colors the picture exhibited so efficaciously by this desolate sea. When the mariner has doubled Cape Horn, he is surrounded and pursued for several weeks by clouds of birds very common in the austral regions. The booby, the petrel, the albatross, the sea-swallow escort his vessel, wheel around it, and follow unfatigued in its rapid track. But as soon as we approach the Desolate Sea all things quit us, disappear, and change. We no longer descry the halcyon, no longer hear the hoarse voice of the seagull. The atmosphere is without sound, the waves of the ocean are dumb, nothing animates the blank horizon. The whole universe seems deprived of life, and it is under the impression of this indescribable sentiment of melancholy that man finds himself alone in the presence of God and the immensity!"

MY.

**Desolation, A Type of.**—Between Humboldt's current and the great equatorial flow there is an area marked as the "desolate region." It was observed that this part of the ocean was rarely visited by the whale, either sperm or right. Why it did

not appear, but observations asserted the fact. Formerly this part of the ocean was seldom whitened by the sails of a ship, or enlivened by the presence of man. Neither the industrial pursuits of the sea nor the highways of commerce called him into it. Now and then a roving cruiser or an enterprising whaler passed that way; but to all else it was an unfrequented part of the ocean, and so remained until the gold-fields of Australia and the guano islands of Peru made it a thoroughfare. All vessels bound from Australia to South America now pass through it, and in the journals of some of them it is described as a region almost void of the signs of life in both sea and air. In the South Pacific Ocean especially, where there is such a wide expanse of water, sea-birds often exhibit a companionship with a vessel, and will follow and keep company with it through storm and calm for weeks together. Even those kinds as the albatross and Cape pigeon, that delight in the stormy regions of Cape Horn and in the inhospitable climates of the Antarctic regions, not unfrequently accompany vessels into the perpetual summer of the tropics. The sea-birds that join the ship as she clears Australia will, it is said, follow her to this region, and then disappear. Even the chirp of the stormy petrel ceases to be heard here, and the sea itself is said to be singularly barren "of moving creatures that have life." This is a type of desolation. It represents that portion of the life of an unhappy man which by age or circumstances is detached from society, and remains in desolation. Now and then pilgrims, like ships of passage, may cross the man's path, but his own sense of desolation remains the same. No cheerful thoughts ever flit with birdlike beauty across the horizon of his mind; and the depths of his soul are solitary with sorrow.

T.

**Despicable, The, the Destructive.**—There is nothing noble in the power to destroy, though soldiers seem to think so. The most despicable creatures are always the most capable as instruments of destruction. The larvæ of an insect or fly, no larger than a grain of rice, silently, and in one season, destroy

some thousand acres of pine-trees, many of them from two to three feet in diameter, and a hundred and fifty feet high! Whoever passes along the highroad from Georgetown to Charleston in South Carolina, about twenty miles from the former place, can have striking and melancholy proofs of the fact. In some places the whole woods, as far as you can see around you, are dead, stripped of the bark, their wintry-looking arms and bare trunks bleaching in the sun, and tumbling in ruins before every blast, presenting a frightful picture of desolation. This work of destruction would take any of the creatures, which we call the noble ones of creation, an immense time to accomplish. They could not at all compete with these despicable insects in this work of destroying the growth of years. An armed banditti in a few days can destroy pictures, statues, monuments, palaces, and temples, which are the result of the wisdom and work of a thousand years. One breath of pestilence in the breeze can kill a population more rapidly than all the armies of Europe. There is no difficulty about destruction, and despicable instrumentalities are always its agents. But the power to create or restore, do you ever find that in association with the despicable or contemptible? IN.

**Despicable Conquerors.**—Military brag has thrown a false halo around the word "conqueror." The fact is that even despicable insects may be conquerors. In Africa there are flies which are the actual lords of certain extensive districts, ruling with so absolute a sway that not only man and his cattle are fain to submit to them, but even the most gigantic animals, the elephants and rhinoceroses, cannot stand before them. There is the zimb of Abyssinia, the very sound of whose dreaded hum sends the herds from their pastures, and makes them run wildly about till they drop with fatigue, fright, and hunger. There is no resource for the pastoral inhabitants but instantly to vacate the country, and retire with their herds to their nearest sands, where they will not be molested. This they would do though they knew that hostile bands of robbers were waylaying them. Such is the terror of a fly. When the British army hunts the

Zulus, the Abyssinians, the Afghans, the Egyptians, or other helpless people, immense honor is always given to its deeds. They are covered with a blaze of glory. To drive away a mass of human creatures in terror is a performance which the lovers of militarism deem to be exceedingly grand. Let them then do honor to the transcendent zimb! Without the aid of even a drum, he makes a noise before which men and animals retreat. He can depopulate and annex a country by the fright which he can inspire. With chaplains and generals, and all the paraphernalia of costly war contrivances, blessed by the bishops and prayed over by civilized aggressors, the British army is still unable to do the work of cruelty much better than the zimb.

BT.

**Despotism, A Weak Point in.**—Though the lion possesses colossal strength, it is wanting in confidence in itself. Indeed its distrust is excessive. It frequently happens that, against its inclinations, it leaves a prey which it deems to have been too easily obtained, suspecting it to be a bait. Frequently, owing to this, man and animal who have been its defenseless prey on the ground have been abandoned by the brute, and have thus miraculously escaped what seemed certain death.<sup>7</sup> Other despots resemble this one in that they have the same weak point of character, suspiciousness. If they never faltered in self-belief they would often be able to crush out human liberties with the force of their violence. But our sultans, czars, emperors, kings, and other tyrants are apt to tremble with suspicion at their own doings. From distrustfulness springs vacillation of policy; and during the despot's doubtings Liberty saves herself from mutilation.

M.

**Destroyer without Sense of Shame, A.**—The horror of the desert does not lie only in its aridity, in its vacuity—this vacuity is not absolute; in default of life, death peoples its solitudes. The glens or gorges frequented by the caravans are lined with stones, symmetrically disposed at certain intervals. These stones mark the places where rest the remains of the hapless pilgrims who have attempted to cross the wilderness,

and perished in the attempt. Round and about each rugged tomb lie the skeletons of animals which none have troubled themselves to bury in the sand. Frequently you may see, on the sandy wastes of Africa or the desolate plains of Asia and the New World, these carcasses laid out in two interminable rows, indicating the gloomy track which should be followed by the traveler, and never failing to remind him of the tribute death levies upon mankind in these accursed regions. Thus does the desert show itself more relentless than even the hungry ocean, which at least devours its victims whole, and affronts the eye with no traces of its murders. But the Moloch of the desert has no shame; it cynically exposes the hideous remains of those whom it has killed; it strews the earth with their bones; it has its museums of skeletons, or rather of preserved animals. D.

→ **Destroyer's Art and Force, A.**—One of the most dangerous denizens of the marshy plains of equatorial America is the gigantic boa-constrictor, a frightful reptile often attaining to the length of thirty-six to forty-five feet. In the morning and evening he places himself in ambush on the border of some lake or watercourse to surprise the quadrupeds which flock thither to quench their thirst. By means of his prehensile tail he suspends himself to a tree on the shore, and patiently awaits the coming prey. When an animal passes within his reach, he swiftly seizes it, enfolds it in his spiral coils, crushes it against the tree which serves for his *point d'appui*, compresses its bleeding mass into a convenient form, covers it with a glutinous saliva, and swallows it. In this fashion he will devour a stag or even an ox entire, nor does he fear to attack the puma and jaguar. D.

→ **Destroyers, Destruction of.**—The green-and-black caterpillar of the white cabbage butterfly devastates our cabbage beds, makes sieves of the leaves, and is disagreeably tenacious of its rights of possession. Pest as it is to the gardeners and cooks, it would be a hundredfold worse but for the exertions of a fly so small as hardly to be noticed but by its effects. Small



though it be, one such insect can compass the destruction of many a caterpillar, though not one-thousandth part of the size of a single victim. While the caterpillar is feeding, the ichneumon-fly, as it is called, settles upon its back, pierces its skin with a little drill wherewith it is furnished, and in the wound deposits an egg. This process is repeated until the ichneumon's work is done. As each wound is made the caterpillar seems to wince, but shows no further sense of uneasiness and proceeds with its eating as usual. But its food serves very little for its own nourishment, because the ichneumon's eggs are speedily hatched into ichneumon-grubs, and consume the fatty portions of the caterpillar as fast as it is formed. In process of time the caterpillar ought to take the chrysalis shape, and for that purpose leaves its food and seeks a convenient spot for its change. That change never comes, for the ichneumons have been growing as fast as the caterpillar, with whose development they keep pace. And no sooner has their victim ceased to feed, than they simultaneously eat their way out of the doomed creature, and immediately spin for themselves a number of bright yellow cocoons, among which the dying caterpillar is hopelessly fixed. Sometimes it has sufficient strength to escape, but it never survives.

CO.

**Destroyers, Detection of.**—When the caterpillars of the buff-tip moth have increased to a tolerably large size, they disband their forces, and each individual proceeds on its own course of destruction. Were it not for the colors they assume, these creatures would do great damage; but the ground being yellow and the stripes black, the caterpillars are so conspicuous that sharp-sighted birds soon find them out, and having discovered a colony, hold revelry thereon, and exterminate the band.

CO.

**Destruction and Renovation: Principles of Nature.**—

The uniformitarian, who would explain every natural event in the earliest periods by reference to the existing conditions of being, is stopped at the foundation-stones of the great natural edifice, each story of which has been inhabited by different

creatures. Nature herself, in short, speaks to him through her ancient monuments, and tells him that, though she has worked during all ages on the same general principles of destruction and renovation of the surface, there were formerly distributions of land vastly different in outline from those which now prevail. The primeval sediments were penetrated by outbursts of great volumes of igneous matter from the interior, the violence of which is made manifest by many clear evidences. Fractures in the crust of the earth caused by earthquakes that suddenly removed masses to positions far above or beneath their previous levels were necessarily productive of such powerful translations of water as abraded and destroyed solid materials, and spread them out over continents, or altogether swept them away by operations infinitely surpassing any changes of which the historical era affords examples. We could cite the works of many eminent writers for numerous evidences of the grander intensity of causation in former epochs, by which gigantic stratified masses were sometimes inverted, or so wrenched, twisted, and broken as to pass under the very rocks out of which they were formed. The traveler amid the Alps and other mountain-chains will there see clear and unmistakable signs of such former catastrophes, each of which resulted from fractures utterly inexplicable by reference to any of those puny oscillations of the earth which can be appealed to during historical times. SI.

**Destruction, Elements that Wait for.**—Perhaps the most distinctive feature of the prairies or savannas from the pampas and llanos is that the dryness in the former is never sufficiently severe to destroy vegetation, as is the case in the latter. But the herbs and grasses often grow so dry in summer that the most trivial accident, such as a lighted match flung carelessly away, or the ashes dropped from a hunter's pipe, will kindle the most awful conflagrations, and the flames will spread devouringly over leagues of open ground, consuming trees and shrubs, and burning to death the cattle or wild animals which haply fall within their range. With the crackling, hissing, seeth-

ing noises of the fire mingle the groans of the perishing beasts, while huge clouds of smoke roll before the wind like the billows of a wind-swept ocean, and live tongues of flame ever and anon light up the terrible scene with lurid splendor. These "prairie-fires" are sometimes kindled in revenge by the Indians, and occasionally the settlers resort to this dangerous but summary method of clearing the encumbered ground. D.

**Development Dependent on Proper Conditions, Proper.**

—Plants, as well as animals, nurtured and grown in perfect darkness, never acquire their natural color. The former become white instead of green. This fact is observed in the *etiolation* or blanching, as it is termed, of certain kinds of vegetables, such as celery, sea-kale, endive, etc. Their leaves, deprived of the sun's rays, do not attain their normal growth or form, neither is the natural odor of such plants fully developed. Professor Robinson, descending into a coal-mine, accidentally met with a plant growing luxuriantly. Its form and qualities were new to him. The sod on which it grew was removed, potted, and carefully attended to in his garden. The etiolated plant languished and died, but the roots speedily threw out vigorous shoots which, from the form of the leaves and their peculiar odor, he readily recognized as tansy. He repeated similar experiments upon other plants, viz., lovage, caraway, and mint, with analogous results. The biography of mankind affords innumerable examples illustrative of this same principle, that the proper development of every kind of life is dependent on proper conditions. It is not thereby necessarily implied that man is the slave of his circumstances, because, unlike the lower creation, he possesses within certain limits power to bring himself under the influence of the conditions favorable to the proper development of his intellect and character. Certain, however, it is that where opportunities for the exercise of that power have been wanting, and where the man has not been brought under suitable conditions, his faculties have dwindled into insignificance, or become abnormally distorted in their growth. A stunted

moral and physical manhood is inevitably the result of certain conditions of existence which can easily be named: and the converse is also true. IL.

**Directness of Course.**—The lemmings are natives of the mountains of Lapland, where they feed on mosses and lichens. At very irregular dates the lemmings migrate in immense numbers, and make their way toward the south in crowded columns. It seems as if they were drawn on by some irresistible power toward a certain fixed point, so straight is the character of their march. They never go round any obstacle, except when it is absolutely impossible to surmount it, and then, as soon as the impediment is past, they again take their former direction. If a large rick of hay happens to stand in their path, they bore right into it, and make a thoroughfare through it. If a boat is moored in a river, and thus crosses their direct road, they will climb over it and take to swimming again on the other side of it. They are not only determined to pursue directness of purpose, but also directness of course.† It is an old proverb that "sometimes the longest way round is the shortest way home." They are never influenced by such a consideration. There are human minds which, in this peculiarity, resemble the lemmings. They will have not only a direct purpose, but also a straight road to it. No ingenuity is ever called into play to avoid an unnecessary difficulty. A blunt honesty requires them to move in one line only. To them the line of march seems of as much importance as their destination. M.

**Disappointment, The Influence of.**—After many disappointments we cannot do our work well. We are disheartened. The poetry of life has departed. With the loss of our hopes was the loss of our love. The bird whose nest has been robbed several times builds up her last in a very slovenly manner. And we act much as that bird does, if, after repeated failures, we again attempt our disappointing task at all. A.

**Disappointment, Excusable.**—There is plenty of disappointment which is not excusable. People do things which their own common sense, if they would use it, could tell them

must end only in one way. Yet, when the inevitable misfortune comes, they call it disappointment. On the other hand, there is an excusable disappointment, as when one trusts to a fixed law of Nature and finds it has suddenly varied. Take, for instance, the case of people who, having always found rain-water to be clear and clean, are disappointed to find a shower of a wholly different character. This experience happened in South America to the inhabitants of one of the Argentine provinces—the city of San Juan. They once had black rain! For many hours during a day and a night this black disappointment poured down upon them. Clothes left out to dry were saturated with black water; and all the vessels which should have gathered pure water were filled instead with black water. No one could have been prepared for this. No one could have guarded against it. People expect rain-water to be clear, just as they expect a good bank to pay its depositors. I. O.

**Discontented Character, The.**—There are people who are constitutionally discontented. Nothing gives them satisfaction. They are like the hermit-crabs, and may well be designated “crabbed.” We see that the animal and the shell are mostly well suited to each other; but it is a remarkable fact that, however well the shell and the crab may seem to be suited to each other, the crab always thinks that a shell belonging to another crab would make a better house. Consequently they will wage direful battles over a few empty shells, although neither of the shells would make so commodious a habitation as that which was already occupied. F.

**Discretion is the Better Part of Valor.**—In the forests of Tartary and South America, says Lord Brougham, where the wild horse is gregarious, there are herds of five or six hundred, which, being ill prepared for fighting, or indeed for any sort of resistance, and knowing that their safety is in flight, when they sleep appoint one in rotation who acts as sentinel while the rest are asleep. If a man approaches, the sentinel walks toward him, as if to reconnoiter and see whether he may be deterred from coming near; if the man continues, he

neighs aloud and in a peculiar tone, which rouses the herd, and all gallop away, the sentinel bringing up the rear. Nothing can be more judicious or rational than this arrangement, simple as it is.

R.

**Disseminators, Unconscious.**—One of the most extraordinary of microscopic plants is the *Achlya prolifera*, whose soft silky threads may sometimes be seen adhering to the surface of goldfishes, and covering them, as it were, with a whitish slime. This appearance is generally looked upon as a species of decay or consumption in the animal itself, and not as an external clothing of parasitic plants. It is, however, a true vegetable growth, each individual consisting of a single filament with a minute pear-shaped ball on the top containing numerous grains, which are the seeds or embryos of future plants. The unconscious fish is the means of their dissemination, and they may be carried by him unwittingly into places where no such plants ever grew before. Birds unknowingly often carry seeds to great distances; so do the winds. But the methods by which Nature uses unconscious agents for the dissemination of seeds are not more remarkable than the processes by which ideas get scattered throughout the human race. A falling apple carries with it a suggestion respecting the law of gravitation. The failure of a quadruped carries with it notions of better mechanical locomotion. A tea-kettle sings a song which tells of the application of steam. Balaam's ass even has a communication to make. In a thousand ways all sorts of things and events are used as the unconscious agents for the dissemination of ideas. There is a mighty mass of things forever moving about the world, carrying with them associations which, on coming in contact with the mind of man, develop into germs of thought.

CH.

**Dissimilar Causes may Produce Like Effects.**—The natures of some people seem to be utterly stupefied and deadened by prosperity. Others are chilled into torpor and petrification by adversity. These different processes work out the same result—inactivity. So in the tropics the intensely hot

season causes the crocodile and other amphibious animals to conceal themselves in the mud and lie apparently dead ; while in the cold regions the severities of the winter throw other animals into a state of hybernation.

VI.

**Dissimilar Effects of the Same Cause, The.**—Consider the totally different effects which the same thing has on different people. An act simple in itself will rouse the joys of one and the rage of another. A substance which is food to one man is poison to another. The same medicine which effects a cure in one case will in a similar case in another man aggravate the malady and enhance his sufferings. Look again at the effects of the tempest on creation. A large number of the existences on the globe are terrified. But the seals love above all the tempest, the roaring of the waves, the whistling of the wind, the mighty voice of the thunder, and the vivid flashings of the lightning. They delight to see, rolling along in a somber sky, the great black clouds which predict torrents of rain. Then it is that they leave the sea in crowds and come and play about on the shore, in the midst of the fury of the elements. They are at home in the tempests. It is in these crises of Nature that they give full play to all their faculties, and to all the activity of which they are capable. When the weather is fine and the rest of creation is full of enjoyment they fall asleep, and resign themselves lazily to the *dolce far niente*.

M.

**Distance, The Delusive Effects of.**—Not unfrequently we discover that the distance between a friend and ourselves has caused us to take an entirely wrong view of him and his proceedings. We contemplate him through a medium which is illusory. When we approach near, however, we see the reality to be the reverse of what it appeared. Now in like manner a natural object of the landscape, when seen from a distance, may appear to the eye to be in a state exactly the reverse of what it really is. Who does not acknowledge instantaneously the magical truth of Wordsworth's saying of a cataract, seen from a station two miles off, that it was "frozen by distance" ? It looks all ice. In all Nature, however, there is not an object

so essentially at war with the stiffening of a frost as the head-long and desperate life of a cataract, and yet notoriously the effect of distance is to lock up this frenzy of motion into the most petrific column of stillness. Such is the illusory effect of distance.

DE Q.

**Distance, The Illusions of.**—The three bright stars which constitute the girdle or *bands* of Orion never change their form; they preserve the same relative position 'to each other, and to the rest of the constellation, from year to year and age to age. And yet in the profound rest of these stars there is a ceaseless motion, in their apparent stability and everlasting endurance there is constant change. In vast courses with inconceivable velocities, they are whirling round invisible centers, and ever shifting their positions in space, and ever passing into new collocations. They appear to us motionless and changeless because of our great distance from them.

B.

**Distinctiveness.**—Every blade of grass, leaf, flower, tree, or animal has distinctiveness. No two things of the same sort can be found exactly alike. Mr. Dixon remarks that even "to every hen belongs an individual peculiarity in the form, color, and size of her egg, which never changes during her lifetime, so long as she remains in health, and which is as well known to those who are in the habit of taking her produce as the handwriting of their nearest acquaintance."

DX. . VA.

**Diversity of Form but Unity of Benefit.**—Diversity of climate circumscribes within limits more or less narrow many of the most useful of our food-producing plants; but this unavoidable evil has sometimes been lessened or obviated in a way which affords another instance of the kind forethought of our Father. One of the most valuable elements of vegetable diet is sugar, and Nature has taken care that many articles in common use shall contain a fair proportion of it. At the same time there are certain plants in which it exists so abundantly that we are accustomed to resort to them for our large supplies. Of these the chief is the well-known "cane." But the sugar-cane flourishes only in the tropics and adjacent regions; and there-



fore all sugar from this source, consumed in extratropical countries, must be brought to them by commerce. Many a wide district, however, lying far in the interior of continents, is unfavorably situated for thus receiving its supplies; and it might either have been deprived of this nutriment altogether, or at least have been inadequately provided with it, had not Providence, with kind intent, created other sugar-producing plants constitutionally suited to different climates, for the purpose of distributing the gift more generally over the world. Thus we find that, from the tropical "cane" region to the Mediterranean, the supply of sugar is maintained by several plants, among which may be mentioned the date-palm and the fig. Beyond this, in climates corresponding to Southern Europe, there are the sorghum and maize, from which much sugar is now manufactured in France and America. Farther to the north, the beet-root in the field and the maple in the forest extend the series of sugar-producing plants almost to the verge of the Arctic circle. Farinaceous food is tropically represented by the rice-plant in great abundance. Proceeding northward, rice is associated with the maize or Indian corn; that is succeeded by wheat; and, lastly, we have oats and barley flourishing almost up to the North Cape. The same representative system is observed in regard to many other important vegetable principles. In this manner, then, the difficulties interposed by climate to the wide distribution over the globe of some of the most valuable products of the vegetable kingdom have been entirely surmounted. According to the laws regulating the vegetable kingdom, it was impossible for the same useful plants to flourish everywhere; but Providence created duplicates, as it were, to yield abundantly the same products, and adapted them by their constitution to take up their position in the different climatic belts of the world, in order that no extensive region should be without them. There is an endless diversity of form but unity of benefit. The form is not of any importance, but the food, of course, is essential. If we turn to the human world we shall see the same principle illustrated in poli-

tics, in religion, and in institutions. It is necessary that men should have some government, but the form of it must depend upon local conditions, and, therefore, will be republican, monarchical, or tribal, according to exigencies. They must have religion, but its forms are protean, and grow according to the necessities and aspirations of nations. They must have dress and speech, but whether broadcloth or linen, whether English or Arabic, will depend upon zone. In an infinite diversity of forms we obtain all our important blessings. BE.

**Diversity Concealed by Resemblance.**—The resemblance between two objects may be so striking as to blind our eyes to the diversity which, on inspection, may be found to be more striking than the resemblance. For instance, if we compare the buffalo with our common cow, no two animals can be more nearly alike either in their form or their nature; both equally submissive to the yoke, both often living under the same roof, and employed in the same domestic services; the make and the turn of their bodies so much alike that it requires a close attention to distinguish them, and yet, after all this, no two animals can be more distinct, or seem to have stronger antipathies to each other. A.

**"Doldrums" of Life, The.**—Seafaring people have, as if by common consent, divided the ocean off into regions, and characterized them according to the winds; e.g., there are the "trade-wind regions," the "variables," the "horse-latitudes," the "doldrums," etc. The "equatorial doldrums," besides being a region of calms and baffling winds, is a region noted for its rains and clouds, which make it one of the most oppressive and disagreeable places at sea. The emigrant ships from Europe for Australia have to cross it. They are often baffled in it for two or three weeks; then the children and the passengers who are of delicate health suffer most. It is a frightful graveyard on the wayside to that golden land. In crossing the equatorial doldrums the mariner has passed a ring of clouds that encircles the earth. And do not these doldrums illustrate a class

of influences to which we are all subject? Are we not all certain in our journey to have days of deep melancholy, when all is dismal, when our hopes are baffled, when we make no progress and yet have no calm? Then, indeed, we suffer; and depression clouds the sky of all its light. Take courage, drooping heart, and remember that thou too hast a golden land in view!

T.

**Drawbacks, Every Condition has its.**—The man-of-war or frigate-bird is virtually nothing more than wings, scarcely any body—barely as large as that of the domestic cock—while his prodigious pinions are fifteen feet in span. The great problem of flight is solved and overpassed, for the power of flight seems useless. Such a bird, naturally sustained by such supports, need but allow himself to be borne along. The storm bursts; he mounts to lofty heights where he finds tranquillity. When he chooses to oar his way seriously, all distance vanishes: he breakfasts at the Senegal, he dines in America. He may continue his progress through the night indefinitely, certain of reposing himself. Upon what? On his huge motionless wing, which takes upon itself all the weariness of the voyage; or on the wind, his slave, which eagerly hastens to cradle him. This strange being is gifted with the proud prerogative of fearing nothing in this world. Little, but strong and intrepid, he braves all the tyrants of the air. He can despise, if need be, the pygarg and the condor; those huge, unwieldy creatures will with great difficulty have put themselves in motion when he shall have already achieved a distance of ten leagues. From all this it might be concluded that this bird was a type of freedom worthy of envy, and that its condition was nearly perfect. But, as often happens in other cases which we consider exempt from disadvantages, a little more information suggests a different judgment. Every condition of life—whether that of statesmen, authors, travelers, or birds, beasts, and fishes—has its drawbacks. It is so with this frigate-bird. If we examine it a little closer we shall find to our astonishment that, when contemplated from

near at hand, this bird, the first of the winged kingdom, has nothing of the serenity which a free life promises. His eye is cruelly hard, severe, mobile, unquiet. His vexed attitude is that of some unhappy sentinel doomed, under pain of death, to keep watch over the infinity of ocean. On looking at him closely you perceive that he has no feet ; or, at all events, feet which, being palmate and exceedingly short, can neither walk nor perch. With a formidable beak, he has not the talons or strength of a true eagle of the sea. He strikes and slays ; can he seize ? Thus, then, this being, so well armed and winged, leads but a trembling and precarious life. Superior to all others in power of flight and vision as in daring, his life is uncertain, and he would die of hunger had he not the industry to create for himself a purveyor whom he cheats of his food. His ignoble resource is to attack a dull and timorous bird, the noddy, famous as a fisher. The frigate-bird, which is of no larger dimensions, pursues him, strikes him on the neck with his beak, and compels him to yield up his prey. All this takes place in the air ; before the fish can fall he catches it on its passage. Such is the character, and such are the drawbacks in the condition, of the beautiful bird which at first sight appeared to be a noble type of a grand existence. The biography of many a man whom we admire suggests numerous reflections which are similar to those which the story of this bird life furnishes.

**Dreams and Time's Silver-Thaw, Boyhood's.**—Nothing produced by the magic touch of winter can excel a phenomenon which may often be seen in the woods of some American countries, where it is familiarly called silver-thaw. It is caused by rain descending when the stratum of air nearest the earth is below 32°, and consequently freezing the instant it touches any object. The ice accumulates with every drop of rain, until a transparent, glassy coating is formed on the shrubs and trees ; the effect is magical, and reminds one of fairy scenes described in Oriental fables. Every little twig, every branch, every leaf, every blade of grass, is enshrined in crystal ; the whole forest is composed of sparkling, transparent

glass, even to the minute leaves of the pines and firs. The sun shines out. What a glitter of light! How the beams, broken, as it were, into ten thousand fragments, sparkle and dance as they are reflected from the trees! Yet it is as fragile as beautiful. A slight shock from a rude hand is sufficient to destroy it. The air is filled with a descending shower of the glittering fragments, and the spell is broken at once. It is a representation of the visions of boyhood vanishing in Time's silver-thaw. At first they are full of pure splendors, all loveliness, all allurements, all graces. Time touches them with harsh hand, and they vanish from our gaze like the beautiful ice phenomenon, leaving only a gorgeous memory behind. RO.

**Drones, Nature's Sentence upon.**—It will be profitable to idle people to observe the arrangement whereby Nature condemns the drones to death in the bee community. No sooner is the business of swarming ended, and the worker-bees satisfied there will be no lack of fertile queens, when issues the terrible edict for the massacre of the drones. (Poor fellows! It is to be hoped they comfort themselves with the reflection that their fate is an everlasting homily, presented by Nature in dogmatical but most effective fashion, of the uselessness of all who labor not for their living. If one must die for the good of one's kind, by all means let it be as a martyr.) Poor fellows! how they dart in and out, and up and down, the hive, in the vain hope of escape! The workers are inexorable. Huber tells us the latter plant their stings so deeply—for the most part between the segments of the abdomen—that they cannot extricate themselves without turning as upon a pivot. The cruelty apparent in the fierceness of the attack is perhaps only kindness, for the wound is *immediately* fatal; the drones expand their wings and die. B. W.

**Dull Natures are Splendid Pain-Bearers.**—In reptiles and batrachians the brain is small, a peculiarity which explains their slight intelligence and the almost entire impossibility of teaching them anything. They can, it is true, be tamed; but although they seem to know individuals, they do not seem to

be susceptible of affection; the slight compass of their brain renders them very insensible. This insensibility to pain enables them to support mutilations which would prove immediately fatal to most other animals. For instance, the common lizard frequently breaks its tail in its abrupt movements. But this curtailment does not seem to affect him; he waits patiently for the return of the organ, which complaisant Nature renews as often as it becomes necessary. A tortoise will continue to live and walk for six months after it is deprived of its brain.<sup>†</sup> It is obvious, therefore, that these kinds of creatures can endure very splendidly that which, in the ordinary way, would be called pain, not because they have fortitude, but because they have insensibility. They remind us in this of many men and women who get great credit for the manner in which they endure the ills of life. Some are praised for their Christianity, others for their philosophy, others for their magnanimity, when investigation will often reveal the fact that the real reason of their composure is to be found in their low organization. When a moral hero bears pain with bravery he does so at an immense effort, because, since he has capacity for vast feeling, so also has he capacity for vast suffering. When a dull and stupid man endures suffering with resignation it is because his nature is not endowed with high sensibility. Extremes meet, and he often takes his stand by the hero and is applauded for virtues which he does not possess. A tortoise-brained man will actually enjoy himself under calamities which would crush a poet. RE.

**Earth, The Transitional Nature of the.**—There is in the delta of the Indus a singular region, called the Runn of Cutch, which extends over an area of 7000 square miles, which is neither land nor sea, but is under water during the monsoons, and in the dry season is incrustated here and there with salt about an inch thick, the result of evaporation. Dry land has been largely increased here during the present century by subsidence of the waters and upheavals by earthquakes. "That successive layers of salt may have been thrown down one upon the other on many thousand square miles in such a region is undeniable,"

says Lyell. "The supply of brine from the ocean is as inexhaustible as the supply of heat from the sun. The only assumption required to enable us to explain the great thickness of salt in such an area is the continuance for an indefinite period of a subsiding movement, the country preserving all the time a general approach to horizontality." The crust of the globe is constantly changing in some form or other in all places. It is true in a material sense that the fashion of the world passeth away.

w.

**Economy that is Loathsome.**—Like all the reptiles, the toad changes its skin, but the cast envelope is never found, although those of the serpents are common enough. The reason why it is not found is this: the toad is an economical animal, and does not choose that so much substance should be wasted. So after the skin has been entirely thrown off, the toad takes its old coat in its two fore paws, and dexterously rolls it, and pats it, and twists it, until the coat has been formed into a ball. It is then taken between the paws, pushed into the mouth, and swallowed at a gulp like a big pill.

co.

**Education, The Virtue and Limits of.**—Education is the development of a man's capacities. It gives nothing; it only brings out what there may be to bring out. The child contains in himself the germ of all he will ever be. Hazlitt contends in his essay "On Personal Character" that no one ever changes his character from the time he is two hours old; that under all circumstances the internal original bias remains the same always, true to itself to the very last. His development is analogous to that of humbler creatures. The material which is capable of expansion is settled once for all. That which is not settled is the mode of its development—the education of it. In this men are like insects. All insects, whatever transmutations they seem to undergo, are yet brought forth with those very limbs, parts, and wings which they afterward seem to acquire. In the most helpless caterpillar there are still to be seen the rudiments of that beautiful plumage which it afterward expands when a butterfly; and though many new parts seem un-

folded to the view, the animal acquires none but such as it from the beginning possessed. The grasshopper, though seemingly without wings, is in reality from the first possessed of those instruments, and only waits for sufficient force to break the bonds that hold them folded up, and to give them their full expansion.

AN.

**Effects, The Dissimilar, of an Easy and Anxious Existence.**—Those animals whose food is always within their reach are in general indolent and peaceful, and possess but little mental activity; and such are the herbivores, with few exceptions. But, on the other hand, the carnivores are extremely prompt and lively; their bones are more compact, their muscles stronger, their faculties keener, and their sense of perception greater; and hence their sensations are more intense and more easily excited, their actions quick and resolute, hesitating at neither plunder nor destruction. Those men whose worldly fortune has been made for them, and who are not challenged to think about the every-day wants of life, are often phlegmatic, stupid, dense. Those other men, who have to produce by their own mental and physical energy everything needful for their own existence, what a different sort are they! Of them come our legislators, poets, artists, inventors, the mental and moral aristocracy of the world.

PA.

**Effort is not Lost, The Smallest.**—The smallest effort which is honestly put forth for the public good must have an influence. It is never lost. It works marvelously though we trace it not. Is any one incredulous? Let him observe the effect on old ocean of one single act on the part of a tiny inhabitant, and he will be astonished at the influence which a unit may exert. Let us suppose the ocean to be perfectly at rest; that throughout it is in a state of complete equilibrium; that, with the exception of those tenants of the deep which have the power of extracting from it the solid matter held in solution, there is no agent in Nature capable of disturbing that equilibrium, and that all these fish, etc., have suspended their secretions, in order that this state of a perfect aqueous equilibrium and repose



throughout the sea might be attained. In this state of things—the waters of the sea being in perfect equilibrium—a single mollusk or coralline, we will suppose, commences his secretions, and abstracts from the sea-water solid matter for his cell. In that act this animal has destroyed the equilibrium of the whole ocean, for the specific gravity of that portion of water from which this solid matter has been abstracted is altered. Having lost a portion of its solid contents, it has become specifically lighter than it was before; it must, therefore, give place to the pressure which the heavier water exerts to push it aside and to occupy its place, and it must consequently travel about and mingle with the waters of the other parts of the ocean until its proportion of solid matter is returned to it, and until it attains the exact degree of specific gravity due to sea-water generally.

T.

**Eloquence, A Condition of.**—Proper burning depends upon proper conditions. All bodies which burn in the air burn with increased brilliancy in oxygen gas; and many substances, such as iron, which do not readily burn in the air may be made to do so in oxygen. A red-hot chip of wood, or a taper with glowing wick, is suddenly rekindled and bursts into flame when plunged into a jar of this gas. Sulphur, which in the air burns with a pale lambent flame, emits in oxygen a bright violet light; and a small piece of phosphorus, when inflamed and placed in oxygen, burns with a dazzling light. It is therefore obvious that successful burning depends upon a suitable atmosphere. We may say just the same of successful oratory—it depends upon suitable pervading influences. If the best orator in the world is placed in an uncongenial moral atmosphere he cannot glow with proper brightness. But if he be placed where his sympathies are fired by the enthusiasm of his audience, his eloquence is kindled and he shines with a glorious luster. It has been said paradoxically that “eloquence is in the audience.” The fact is that the audience supplies the moral oxygen which enables the orator to display his brilliancy.

E. C.

**Enemies, Power of Small.**—Sometimes most gloomy fears

are entertained for the noble oak and pine forests of Germany. It is stated that millions of fine trees have already fallen under the insidious attacks of a beetle, a species of extreme minuteness, which lays its eggs in the bark, whence the larvæ penetrate between the bark and the wood, and destroy the vital connection between these parts, interrupting the course of the descending sap, and inducing rapid decay and speedy death. In the north of France the public promenades are almost everywhere shaded by avenues of noble elms. In very many cases these trees are fast disappearing before the assaults of a similar foe. And the grand old elms of London parks and gardens are becoming so thinned that great alarm has been felt, and the resources of science employed for the checking of the mischief. Fifty thousand trees, chiefly oaks, have also been destroyed in the Bois de Vincennes, near Paris. In all these cases the minute but mighty agent has been some species or other of the genus *Scolytus*. This is an illustration of the singular power for mischief often possessed by small enemies whose capacity seems but is not despicable.

RO.

**Enemies, The Power and Method of Small.**—Very often the little cares of life break down the constitution which successfully dared great dangers and defied vast difficulties. Very often the little traitor has ruined the enterprise which authority could not crush. Very often man finds his worst enemies among the smallest creatures. Very often the greatest creatures, having braved even man, succumb to little enemies which appear contemptible. Thus the whale, that giant of the sea, finds the narwhal a worse enemy than man. It may escape the lord of creation, his fleets and harpoons; but these narwhals, assembling in a troop, advance in line of battle against the whale, attack it on all sides, bite it, harass it, fatigue it, force it to open its mouth, and then devour its tongue. The wounded whale, then losing a quantity of blood, is worn out and becomes the easy prey of white bears, dogfish, and like enemies whom it could before defy. The leviathan is vanquished by insignificant fishes. Little enemies look out for weak places. They

always know the value of the tongue, and have brought down many a strong personage by a strategic method of attack having that for the object. M.

**Enemies, Our Own Peculiar.**—Even different sorts of animals seem to have allotted to them their own peculiar enemies. One of the causes which render the center of Africa difficult to be explored is a fly not larger than the house-fly. The tsetse-fly is of brown color, with a few transverse yellow stripes across the abdomen, and with wings longer than its body. It is not dangerous to man, to any wild animals, or to the pig, the mule, the ass, or the goat. But it stings mortally the ox, the horse, the sheep, and the dog, and renders the countries of Central Africa uninhabitable for those valuable animals. It seems to possess very sharp sight. It darts from the top of a bush as quick as an arrow on the object it wishes to attack. This sucker of blood secretes in a gland, placed at the base of his trunk, so subtle a poison that three or four flies are sufficient to kill an ox. Men all the world over are subject to some sort of moral tsetse-fly. The tormentor seems specially adapted for injury to the particular persons whom it attacks, and it passes over others. The tsetse wife, tsetse mother-in-law, tsetse inquisitor, are all creatures who have a mission to sting to death the various classes of victims which have been specially allotted to them by Nature. The moral mules and moral pigs may escape their tsetse-fly. But the more highly organized and the most useful specimens of humanity are as certain to be attacked by their tormentor on their journey through the "barren land" as are the valuable animals in the center of Africa. I.

**Enemy, No one is too Contemptible to have an.**—Life is strangely beset with enemies. No man is too contemptible to have one. Even humble creatures like caterpillars have enemies. For example, the ichneumon-fly deposits its eggs upon caterpillars, boring holes in their skin with its pointed ovipositor, and inserting its eggs in the perforations. Minute as is the insect when compared to the caterpillar, bearing about the same

relationship that a rabbit bears to an elephant, the legs are so long that they can include a considerable portion of the skin in their embrace, and so strong that they can retain their hold in spite of the contortions with which the poor caterpillar tries to rid itself of its persecutor. H.

**Enemy, The Unexpect'** 1.—How often the enemy is found to be the person who appeared to be ignorant of even our existence—one fully occupied with objects far away, and totally engrossed in nobler things. Now behold his emblem in yonder kite. Notice the bird. Its flight is singularly graceful and easy. The extended wings seem to have the power of supporting their owner in the air almost without the least exertion: it glides smoothly along without effort, now rising gently, now descending, to use the words of Buffon, "as if sliding upon an inclined plane," now wheeling round in graceful circles, and all with scarcely a perceptible movement of the wings, but simply by the action of the rudderlike tail. It seems all occupied with the sky. During his graceful evolutions, however, the kite has his eyes steadily fixed upon the ground beneath him, with which he seems to have so little to do; and the moment his prey makes its appearance in the shape of a mole, a mouse, a young rabbit, or leveret, or any other small terrestrial animal, the long wings are closed in an instant, and the kite descends with astonishing velocity upon his surprised and unsuspecting quarry.

T. B.

**Enjoyment, The Perils of.**—Enjoyment is often attended with deadly peril. We set our heart on obtaining some sweet pleasure; little resistance is offered, and we obtain our desire; but the price is ruin. We are caught like the winged creature which seeks the sweets of the glaucous birthwort. The whole of the internal surface of the tubular flower of the glaucous birthwort (*Aristol glauca*) is beset with minute strong spines pointing downward; these present no impediment to the animal which may seek for the sweet liquor lodged upon the nectarium at the base of the blossom, nor is there any obstruction provided for its return by means of valves or contractions, the

tube remaining open ; but the creature cannot crawl up by reason of the inverted spines ; and to prevent its escape by flying up the tube, the flower makes an extraordinary curve, bending up like a horn, so that any winged creature must be beaten back by striking against the roof of its neck as often as it attempts to mount, and falling back to the bulbous prison at the base of the flower, dies by confinement and starvation. J.

**Enthusiasm, The Deobstruent Power of.**—Vapor of a high temperature is capable of dissolving silica, and Mr. Darwin alludes to an instance in Terceira (one of the Azores), where steam, issuing from fissures in the trachytic rock, gradually softens and decomposes the crystalline mass till the whole is reduced to a white chalky clay, with which the inhabitants whitewash their houses. In like manner the high enthusiasm of a people when it issues forth against petrified constitutional monstrosities possesses a power to melt them away. No time-hardened opposition of colossal forces can resist its operations. Its warmth will reduce them, and from the residuum will obtain properties for the general benefit. Though the enthusiasm of the people is sometimes designated “mere vapor,” we can see that “vapor” possesses a power to melt and to remove. AD.

**Error, The Instinct and Operations of.**—Moral error has in it the instinct of mischief. It is bred of malice, works maliciously, and rears its progeny often on the unsuspecting and the unoffending. This is the law of its existence, and all its family follow it. In the history of its birth, its insidiousness, and its cowardice, it resembles the flies of the ichneumon tribe. All the flies of the ichneumon tribe are produced in the same manner, and owe their birth to the destruction of some other insect, within whose body they have been deposited, and upon whose vitals they have preyed till they came to maturity. As moral error attacks everything within its reach, so also do the flies. There is no insect whatever which they will not attack in order to leave their fatal present in its body ; the caterpillar, the gnat, and even the spider himself, so formidable

to others, is often made the unwilling fosterer of destructive progeny.

A.

**Error, The Recuperative Power of.**—Error is a worm which it is difficult to destroy. It possesses a power of wriggling away from its assailants and recuperating its existence even when, to all appearances, it has been annihilated. Its vitality resembles that of the earthworm which we often see an object of contention between two birds, neither of which is willing to part with it. In the contest the worm is frequently divided into three parts, each of the birds flying away with a portion, and leaving the center part of the animal behind, which, if the situation where it is left be favorable, begins in a few days to repair its loss, and in a short time restores its deficient parts and resumes activity. In like manner an error often revives after triumphant controversialists have departed in complacency, rejoicing in their spoils.

P.

**Error, The Annihilation of.**—The Fiume Salso in Sicily enters the sea so charged with various salts that the thirsty cattle refuse to drink of it. A stream of sulphureous water, as white as milk, descends into the sea from the volcanic mountain of Idjeng, on the east of Java; and a great body of hot water, charged with sulphuric acid, rushed down from the same volcano on one occasion, and inundated a large tract of country, destroying, by its noxious properties, all the vegetation. In like manner the Pusambio, or "Vinegar River," of Colombia, which rises at the foot of Puracé, an extinct volcano, 7500 feet above the level of the sea, is strongly impregnated with sulphuric and hydrochloric acids, and with oxide of iron. We may easily suppose the waters of such streams to have properties noxious even to marine animals. It is a marvelous fact, however, that when these and other bad waters commingle thoroughly with the great ocean they lose all their power to injure. They are absorbed in its infinite purity, and their badness is extinguished. Sir Isaac Newton likened truth to the sea. Accepting his metaphor, we may with more patient eyes watch all the vicious and erroneous currents of pestilent public opinion running their course, and feel sure that their power to injure mankind is circumscribed,

because they will eventually be neutralized by and absorbed in the sublime ocean of truth.

E.

**Errors, The Reappearance of Old.**—It is very remarkable that errors which are buried in one generation often arise and are current in subsequent generations. You think they have disappeared forever, but lo! they are again in motion yonder. They remind us of the subterranean courses of some of the rivers which we meet with, more particularly in the Secondary Limestone districts of some countries. Styria and the neighborhood of Trieste are examples. Suddenly emerging in large volumes from the base of a lofty mountain, the waters flow across rich alluvial plains, and are then as suddenly lost in the cavities of another mountain, again to issue forth to the light of day in a distant region after their subterranean course.

MA.

**Eternal Cycle, The.**—On the surface of our globe there moves an eternal cycle of interchanges. The inorganic is continually being fashioned into the organic, and this, after passing through successive changes, and after having displayed the manifestations of life, is ever passing again into the inorganic, ever again giving up its fashioning forces. The crude and formless mass of the air, gradually organized in vegetables, passes without change into animals, and becomes the instrument of sensation and thought; then vanquished by this effort, and, as it were, broken, it returns as crude matter to the source whence it had come. Thus is the mysterious cycle of organic life upon the surface of the globe completed and maintained. The air contains or engenders the oxidized substances required—carbonic acid, water, nitric acid, and ammonia. Vegetables, true reducing apparatus, seize upon the radicals of these, carbon, hydrogen, azote, ammonium, and with them they fashion all the variety of organic or organizable matter which they supply to animals. Animals, again, true apparatuses of combustion, reproduce from them carbonic acid, water, oxide of ammonium, and azotic or nitric acid, which return to the air to reproduce the same phenomena to the end of time.

BL.

**Eventide Favorable to Meditation.**—The dimness of

evening is favorable to meditation, because much light stimulates the optic nerve to a degree that distracts the attention from remembered ideas, and impresses realities too forcibly to permit imagination free exercise.

U.

**Evil, The Good of.**—When the minarets of Asia sparkle in the morning's rays, the vultures, crows, storks, ibises, set out from their balconies on their various missions; some to the fields to destroy the insect and the serpent; others, alighting in the streets of Alexandria or Cairo, hasten to accomplish their task of municipal scavengering. Did they but take the briefest holiday, the plague would soon be the only inhabitant of the country. If the sun is punctual in fertilizing life, these scavengers—sworn in and licensed by Nature—are no less punctual in withdrawing from his rays the shocking spectacle of death. Seemingly they are ignorant of the importance of their functions. Approach them and they will not retreat. When they have received the signal from their comrades, the crows, which often precede them and point out their prey, you will see the vultures descending in a cloud from one knows not whence, as if from heaven. Naturally solitary and without communication, mostly silent, they flock to the banquet by the hundred, and nothing disturbs them. They quarrel not among themselves, they take no heed of the passers-by. They imperturbably accomplish their functions in a stern kind of gravity, with decency and propriety; the corpse disappears, the skin remains. In a moment a frightful mass of putrid fermentation, which man had never dared to draw near, has vanished—has reëntered the pure and wholesome current of universal life. The vulture is an offensive bird, and typifies moral evil. Like moral evil, it has to accomplish good. Our tyrant kings, our brutal soldiery, our dishonest speculators, what have they, the high priests of moral evil, been compelled to accomplish in spite of their own designs? They have been used by Nature as vultures. They have cleared the way for settled government, strong laws, railways, roads, and civilization.

T. B.

**Evil, Destroyers of.**—The secretary-bird, or serpent-eater



(*Serpentarius reptilivorus*), is found upon the dry plains of Southern Africa, where it wages an incessant and deadly war with the infinite multitude of snakes and reptiles of all kinds with which that region abounds. Its wings, which are of large size, and covered with strong quill feathers like those of most *Falconidæ*, are further armed with blunt but strong spurs at the wrist-joint, and these wings the bird holds before him like a shield, keeping them in continual agitation, *sparring*, as it were, as he advances sidelong toward his intended prey. His long legs, which enable him to run with rapidity, also give him a great advantage in this mode of attack, by raising his head to a safe height from the ground; and as he gradually approaches the snake, he watches carefully for the moment when the latter is about to spring upon him, and to fix its poisonous fangs in some vulnerable part of its adversary's body. But this is usually a vain attempt; as the reptile dashes upon its enemy, a sudden and most violent blow from the bird's armed wing throws him writhing upon the ground, and this process is repeated if the snake be strong enough to return to the attack. After reducing his foe to a helpless condition by these tremendous blows, the bird, like a victorious gladiator, proceeds to despatch his opponent, whom he swallows whole if of a convenient size, or tears to pieces if too large to be disposed of at a single gulp. He has sometimes been seen to carry up a snake, which refused to die easily, to a great height in the air, and then let him fall to the ground. He confers great benefits upon the inhabitants of a region so overrun with reptiles as Southern Africa. It is somewhat difficult to understand the reason for the creation of these poisonous reptiles, as also it is to account for the introduction into our world of moral evil and its mischievous progeny. The secretary-bird may be taken to illustrate the very important truth that although Nature has produced and does rear evil things she also provides adequate means for their destruction. To help in the destruction of noxious reptiles we have the secretary-bird. For the purpose of combating the vices we have the preacher and the reformer.

**Evil, The Power to Reject.**—It is a remarkable fact that the venom of poisonous snakes (indeed any morbid and venomous virus) can be swallowed with impunity. It is neither acrid nor burning, and only produces a sensation on the tongue analogous to that caused by greasy matter. If healthy, there is a power within us to neutralize the operation of this poison, and to reject it. The mind possesses an analogous power. It may imbibe moral poison, but if in a healthy condition it will not appropriate it into the system.

RE.

**Evil, The Limitation of.**—The *Raptores*, or birds of prey, live only by rapine, and are naturally plunderers and bloodthirsty. Like the *Carnivora* among mammalia, they live on animals either dead or living; like them too they possess the strength and adroitness which are necessary to satisfy their sanguinary appetites. They enjoy no power of song. Destruction seems the sole object of their existence. Nocturnal and diurnal, they are the terror of all the rest of the feathered creation, among whom they make numerous victims. They are cruelly despotic, and reign as lords and masters in the districts which they choose for their territory. But Nature puts a limit to evil, physical as well as moral. And so, with her ever-admirable foresight, she has wisely limited the reproduction of these destructive and cruel creatures. The largest of them only lays two eggs a year; the others on an average five or six. What a horrible thing it would be if they possessed the fecundity of the domestic fowl! A few specimens of evil are quite enough, and so Nature provides that there shall only be a few. Caligulas, Neros, Buonapartes, and all that class of creatures—the human *Raptores*—are also beneficently kept within limits as to numbers.

RE.

**Evil in Unexpected Places.**—Evil is not limited to any locality or set of circumstances. Men sometimes think that if they could get away from the din and jargon of the city, and the tricks and snares of the market, they could discover some quiet sacred glen, or lovely peaceful retreat, where baseness and depravity could not enter. Never was there a greater

error. Of old the serpent found his way into even paradise. Commerce and religion are two mighty streams whose civilizing influences are felt all the world over; yet even in closest contiguity to their influences what horrible forms of evil and grotesque shapes of barbarity are discernible! The physical world suffers like the moral world from the intrusion, into its most beautiful associations, of incongruous and detestable forms. Look at those two magnificent rivers—the Orinoco and Amazon. Behold the forests which cover the region that divides them—forests the growth of thousands of years, grand and noble, almost sublime. What have we in this noble panorama to mar the beauty and to chill our joy? Why, where the shallow parts of the river disclose a sand-bank, the crocodile may be seen, with open jaws, and motionless as a rock, its uncouth body often covered with birds; while the checkered boa-constrictor, its tail lashed round the trunk of a tree, lies coiled in ambush near the bank, ready to dart with certain aim on its prey. Rapidly uncoiling, it stretches forth its body to seize the young bull, or some feebler prey, as it fords the stream, and moistening its victim with a viscid secretion, laboriously forces it down its dilating throat. Let the lesson be learned that in this world there is no scene into which evil will not creep, no place where danger does not lurk.

VI.

**Evil Detected though in New Modes of Existence.—**

It is not at all uncommon for honey to be unwholesome on account of its having been collected by bees from poisonous plants. The honey of Trebizond, for example, has long been notorious for its deleterious properties; it poisoned the soldiers of Xenophon during the famous retreat of the Ten Thousand. Pliny, too, speaks of it; and to this day its intoxicating effect is frequently witnessed. It arises, no doubt, from the plants, chiefly the *Azalea pontica*, from which the honey is gathered. Mr. Barton has given us a similar account of the poisonous quality of the honey gathered by bees from the savannas of New Jersey, where the *kalmia* and the *azalea* are the principal flowering shrubs.

L.

**Evil, The Breaking Forth of Hidden.**—Sometimes the moistened clay on the margin of the swamps near the Orinoco will blister and swell slowly into a kind of mound, until, with a violent noise, like the outbreak of a small mud-volcano, the accumulated earth is cast high into the air. The spectator who comprehends the purport of this strange scene immediately retreats, for he knows that the birth of the portentous travail will be a gigantic water-snake or huge crocodile aroused from its torpidity. D.

**Evil Thing, The Terrific Force of an.**—The lance-headed viper, or *Trigonocephalus* (*Bothrops lanceolatus*), is most common in the West Indian Islands, where it is justly dreaded. It has been computed that at Martinique fifty persons out of a population of one hundred and twenty-five thousand souls die annually from the bite of these odious reptiles. Their fecundity is frightful. Every female bears sixty young, which on their very advent into the world are completely formed and able to wound. This viper, unlike the rattlesnake, carries no warning rattle; nothing indicates its presence. D.

**Exaction, The Unwisdom of.**—The llama, or guanaco (*Auchenia llama*), is found among the recesses of the Andes. In the silver-mines his utility is very great, as he frequently carries the metal from the mines in places where the declivities are so steep that neither asses nor mules can keep their footing. The burden carried by this useful animal, the camel of the New World, should not exceed from one hundred to one hundred and twenty-five pounds. If the load be too heavy he lies down, and no force or persuasion will induce him to resume his journey until the excess be removed. Thus he teaches us the un-wisdom of endeavoring to exact too much from those who are willing to serve us well. VT.

**Existence by Instalments.**—There are creatures which possess existence by instalments. "The *Vibrio*, *Rotifer*, *Macrobrotus*, etc., are," says Professor Owen, "organisms which we can devitalize and revitalize, devive and revive, many times." Living together as these sorts of organisms generally do, tenant-

ing the same tufts of moss or the same patches of lichen, they eke out their existence by instalments, instead of enjoying a more or less definite and continuous span of life. They possess the power of resuming active vital manifestations, after these have been completely in abeyance for five, ten, fifteen, or even twenty years. During the suspension of their functions they can no more be looked upon as living things than can the dormant seeds in the Egyptian catacombs. Though not living, they, like these seeds, possess the potentiality of manifesting life; and for each alike, in order that this potentiality may pass into an actuality, the first requisite is water, without which life in any real sense is impossible.

B. L.

**Expansion, Room for.**—The narrow dogma makes no allowance for the expansion of men's hearts and brains, and therefore becomes obsolete. The society which is based on rigid bigoted small rules and pedantic formulas breaks up, because no arrangements have been made for the inevitable expansion of the hopes and opinions of its members. There must be room for expansion. This is perfectly well understood in the arts, and practical men make proper arrangements in obedience to this law. The bars of furnaces must not be fitted tightly at their extremities, but at least must be free at one end, otherwise in expanding they would split the masonry. In making railways a small space is left between the successive rails, for if they touched, the force of expansion would cause them to curve or would break the chairs. Water-pipes are fitted to one another by means of telescopic joints, which allow room for expansion. In every department there must be provision made for expansion. *EL.*

EL.

**Exteriority Secondary to Utility.**—The swallow caught in the morning and closely examined is seen to be a strange and ugly bird; but this fact perfectly well agrees with what is, *par excellence, the bird*—the being among all beings born for flight. To this object Nature has sacrificed everything; she has laughed at mere form, thinking only of movement, and has succeeded so well that this bird, ugly in repose, is when flying

the most beautiful of all. Scythelike wings, projecting eyes, no neck (in order to treble her strength), feet scarcely any or none; all is wing. These are her great general features. And a very large beak always open, which in flight snaps at its prey without stopping, closes, and again reopens. Thus she feeds while flying; she drinks, she bathes while flying; while flying she feeds her young. Her exteriority having been made in all respects entirely subservient to her efficient performance of her movements, she does all these things easily and well. It would be a good thing if some of our fashionable ladies and gentlemen would learn the lesson which Nature teaches by means of the swallow. Why cannot they so arrange their externals as to make them helpful instead of retardatory in the work of life? Why must they put the proper discharge of duties in the second place, and showy exteriority in the first? T. B.

**External Change without Radical Alteration.**—It is of paramount importance to discriminate between a mere change of form of a thing and a radical alteration in its nature. Here is the test question for solution: "Is the change in question merely an external one, or is it a change in essence?" Be not deceived; you may have a total change in the outside which leaves the subject of it still the same. Look among the bushes there and you behold clearly enough the skin of a snake. He has certainly changed. Yes, but only in his skin. The snake is still alive, and as much a snake as ever. Even this modification of his external appearance too was (as it often is with other existences besides the snake) a mere matter of convenience. The external covering just thrown off was not so good as the one which was to supersede it, and which had been in preparation some time. So as soon as the new skin was quite ready the snake wriggled to the bushes most expedient for his purpose, and by their help literally crawled out of his old skin and left it there on the bush. A wonderful change no doubt in one sense; and yet it is one which is unattended by any alteration in the nature of the snake. We often observe total changes in the manners of society, and in the tricks of politics, which are

not at all important, and superficial alterations which have no radical significance whatsoever. When the acorn develops into the oak, the transformation is wonderful. But when the snake sheds its skin, it is still a snake. The proceeding is just one of those many surface changes which the world sees whereof nothing important issues. C. O.

**Extremes, The Love for.**—The force of attraction varies in different parts of the magnet; it is strongest at the two ends, and is totally wanting in the middle. This may be seen very clearly when a magnetic bar is placed in iron filings; these become arranged round the ends of the bar in feathery tufts, which decrease toward the middle of the bar, where there are none. That part of the surface of the bar where there is no visible magnetic force is the *neutral line*, and the points near the ends of the bars where the attraction is greatest are the *poles*. Men are often like these iron filings on the magnet. They shun the neutral line, and rush to one or other of the opposite poles of thought. In nearly all departments of thought and action, and among all religionists and politicians, we see the masses attracted by some extremes. In times of passion and excitement it seems of little service to point out to men that experience teaches that truth often resides between the extremes. The attractive force of that abstract fact is not enough for them. The magnetism of the extreme view is all-powerful; and thus the partizans draw off, not only as far as possible from each other, but also a very long way from the truth itself, which, though they heed it not, remains like a neutral line drawn between them both. EL:

**Eye not Infallible, The.**—One of the most curious mirage effects is to be seen on the Wash during hot summer weather. The mirage is there known as the "looming of the land," and when it is about it is impossible at moments to distinguish the sand and weed banks from the sea, while the distortion, both perpendicular and horizontal, of ship-masts, etc., is ludicrous. In one case a herd of seals on a sand-bank seemed transformed into a row of long-legged monsters, wading in water, or rather

rooted by their long legs to the legs of a similar row of monsters below them, which was their distorted reflection in wet mud.

NAT.

**Eyes, Creatures without.**—Men who have no intellectual perception and men who have no spiritual perception may be met with. Nature produces creatures without eyes sometimes. In the grotto of the Madalena at Adelsberg, in Illyria, many hundred feet below the surface are seen creatures like slender fish moving in the mud below the water. These are the protei: the animal is of a fleshy whiteness and transparent in its natural state, but when exposed to light its skin gradually becomes of a darker color, and at last gains an olive tint. Being abundantly furnished with teeth, it is inferred that the animal is one of prey, yet in its confined state it has never been known to eat, and it has been kept alive for many years by occasionally changing the water in which it was placed. In dry seasons the protei are very seldom seen in the lake of the Madalena, but after great rains they are often abundant. Their natural residence is an extensive subterranean lake, from which in great floods they are sometimes forced through the crevices of the rocks into the place where they are found. These singular creatures have no organs of vision, but in their place are two small dots which occupy the position of eyes. It has not been ascertained that they have any power of perception. The entire absence of color, and the imperfect development of their organs in at least their intermediate condition, between those of a reptile and a fish, seem to be the result of the absence of light.

SA.

**Fallen, The Tempting Instinct of the.**—One of the most remarkable examples of the instinct to tempt others into a lower condition is shown in the method by which the tame female elephant is trained to catch wild males. The females appear, from the accounts which we have of their proceedings in Sir Stamford Raffles's Life, and in "Williamson's Sports," to manifest a desire to bring the males, which the hunters point out to them, into the same condition in which they are themselves.



They will inveigle any one to which their attention is directed with the most artful and curious wiles ; they will lead him about so as to divert his attention from the huntsmen or drivers ; and when the cords are passed round his legs, they will even assist in fastening them. How similar is all this to the efforts which those who have become slaves to habit and sin put forth in order to reduce other persons into a like bondage ! R.

**Falling, Obstacles to.**—Since a body falls to the ground in consequence of the earth's attraction on each of its molecules, it follows that, everything else being the same, all bodies, great and small, light and heavy, ought to fall with equal rapidity, and a lump of sand without cohesion should, during its fall, retain its original form as perfectly as if it were compact stone. The fact that a stone falls more rapidly than a feather is due solely to the unequal resistances opposed by the air to the descent of these bodies. The resistance opposed by the air to falling bodies is especially remarkable in the case of liquids. The Staubbach in Switzerland is a good illustration. An immense mass of water is seen falling over a high precipice, but before reaching the bottom it is shattered by the air into the finest mist. In a vacuum, however, liquids fall, like solids, without separation of their molecules. The resistance opposed by the customs and ethics of society is the reason why many men are deterred in a rapid fall into ruin. Take away all the resistance which etiquette, conventional morality, philanthropy, and religion offer to the downfall of men, and, like things in a vacuum, how sadly fast the descent would become ! Many men in respectable elevation owe their adventitious position to the happy accident of strong resistance offered to their fall by the circumstances and influences surrounding. EL.

**Family, Unlike the.**—We are sometimes in human society startled to find a member of a family utterly unlike every other member of it in character, appearance, and habits. No ancestor can be discovered to bear resemblance to him. This is strange ; but the peach-tree can tell a stranger story. Occasionally, at long intervals of time, a peach-tree in Virginia, or under

the widely different climate of England, produces a single bud, and this yields a branch which ever afterward yields nectarines. Now nectarines differ, as every one knows, from peaches in their smoothness, size, and flavor, and the difference is so great that some botanists have even maintained that they are specifically distinct. Thus does Nature intimate to us that she can make use of the parent to produce something quite unlike the parent's family.

A. P.

**Fascination a Weapon of Destruction.**—The rattlesnake (*Crotalus horridus*) feeds principally upon smaller mammals and upon birds, which it seems certain it possesses a peculiar power of fascinating—the effect, it may be, of intense fear. “When the piercing eye of the rattlesnake is fixed upon them,” says Mr. Murray, “terror and amazement render them incapable of escaping; and while involuntarily keeping their eyes fixed on those of the reptile, birds have been seen to drop into its mouth as if paralyzed, squirrels descend from their trees, and leverets run into the jaws of the expecting devourer.” Hogs and pecararies, however, are unaffected by this panic, and feed greedily upon the reptile which causes it, whose venomous fangs cannot penetrate their formidable hide. ‡

D.

**Fear, The Stupefying Effects of.**—At the mere sight of one of the falcon tribe a partridge will stop as though struck with stupor, and so overcome with fear as almost to be incapable of concealing itself, remaining absolutely immovable, and it is not until the dreaded enemy is gone that it regains self-control. ¶ It will even permit itself to be stifled in its hiding-place rather than expose itself to the falcon, vulture, or sparrow-hawk. The like stupefying effects of fear are constantly seen among mankind. The lives of many are subject to constant misery as the result of fears, sometimes reasonable, sometimes unreasonable, respecting the intentions of real or imaginary enemies. And probably there is no individual who has not at some time or other been under the horrible spell of fear which, whether acting on man or bird, has for the time the power to snatch from the muscles and nerves all their vigor and tone, and deprive its subject of all capacity for action.

RE.

**Feeble, The Might of the.**—Before despising what may appear feeble and impotent, it is worth while to pause to learn a lesson from some of Professor Bailey's examinations. Professor Bailey having examined deep-sea soundings obtained by Brooke's deep-sea-sounding apparatus from the bottom of the ocean, at the depth of more than two miles, found them, he tells us, all filled with microscopic shells. They were chiefly made up of perfect little calcareous shells (*Foraminiferæ*), and contained also a small number of silicious shells (*Diatomaceæ*). It would seem that these little marine insects, which, when alive, glow and sparkle on the surface of the sea, and there build their habitations, when they die sink in vast multitudes, and settle at the bottom, as if for the purpose of filling up the vast chasms of the ocean. They are the atoms of which mountains are formed, plains spread out. Our marl-beds, the clay in our river-bottoms, large portions of many of the great basins of the earth, are composed of the remains of just such little creatures as these, which the ingenuity of Brooke and the industry of Berryman have enabled us to fish up from the depth of more than two miles (twelve thousand feet) below the sea-level. These *Foraminiferæ*, therefore, when living, may have been preparing the ingredients for the fruitful soil of a land that some earthquake or upheaval in ages far away in the future may be sent to cast up from the bottom of the sea for man's use. Now who does not recognize in history that something of a similar process goes on all the world over; that the influences which appeared merely transient have not been so, but have reappeared in other forms and places; that the little things which were forgotten have not been obliterated, but have been accumulating and gathering power; that the multiplication of little things has produced vast changes; that society is not renovated by rapid alterations upon its surface, but by the operation of an immense number of individuals; that, in fact, the weak things of the world often confound the mighty, and the base things are those chosen to fill up social chasms and effect stupendous changes? That which the hurricane is powerless to accomplish

is quietly done by the *Foraminifera*. The change which revolutions are impotent to achieve is realized merely by accumulated words of wisdom and deeds of benevolence. T.

**Feminine Masculinity.**—It is a singular fact that the males in certain sub-breeds of fowls have lost some of their secondary masculine characters, and from their close resemblance in plumage to the females are often called “hennies.” Mr. Grantley F. Berkeley relates the still more singular case of a celebrated strain of “polecat game-fowls” which produced in nearly every brood a single hen-cock. The great peculiarity in one of these birds was that he, as the seasons succeeded each other, was not always a hen-cock, and not always of the color called the polecat, which is black. From the polecat and hen-cock feather in one season he molted to a full male-plumaged black-breasted red, and in the following year he returned to the former feather. But this is not the only specimen of feminine masculinity exhibited by creatures under domestication. There is the modern married man, whose ancestors have been under severe conjugal training—the half-man. This curiosity of dejection always reminds one of the “hennies.” For a season he has the appearance of being a manikin, but for quite an equal period he resembles the shrew. Unfortunately there is, in his case, no fixed time for his alternations of character, so you can never be sure as to how you may find him. He may show signs of the masculine character at the very moment when you expect to behold him in his most interesting effeminacy; and, on the other hand, you may find him with all the vices of the female at the very moment when you had anticipated that he would exhibit himself as a man. He is most often met with among the middle classes of our large towns, and is clearly an interesting addition to the list of organisms which have very much varied under domestication. VA.

**Fictitious Prestige.**—It would be a marvelous investigation to ascertain the principles upon which honor and credit and reputation are bestowed on men by their fellows. Very often there is no more just ground for the reputation men are

enjoying than there is for the reputation which the chimpanzees have acquired. The chimpanzees live in troops in the forest, or at least they congregate for the purpose of repelling the attacks made upon them by the *Carnaria*, and to drive from their domains such other animals as may attempt to install themselves therein to their disadvantage. Their weapons are ready to their hand—stones and the branches of trees. Like the oranges, they construct rude beds or couches of interwoven boughs stripped of their greenery. In consequence of this the negroes of Guinea, scarcely much higher in the scale of intelligence than themselves, look upon them as a *nation*, and believe that if these men of the woods do not speak, it is because they fear to be condemned to work or carried off into slavery, and not from incapacity. So these creatures have credit for being a nation, and as it also seems, for being very acute and shrewd. It is obvious that in many other instances among men individuals and classes are credited with powers and a *status* which are entirely fictitious. "In the kingdom of the blind, the one-eyed man is king." Stupid conventionality, stolid prejudice, cold formality, and long habit have all had the effect of so dwarfing our mental capacity that we are constantly ascribing to those whom the accident of birth has placed in a sphere different from our own, some wonderful ability which they cannot possess, and some extraordinary power which does not exist. In all this we are like those negroes of Guinea, for we look up at assemblages of little men in elevated positions, and ascribe to them fictitious prestige, as they look up at the chimpanzees, and actually conceive them to be in mind sagacious and in social power a nation!

D.

**Finical Disposition, The.**—Humboldt states that the capuchin saki (a monkey inhabiting Brazil, Guiana, and Colombia) takes the most minute precautions not to wet its beard. When it is thirsty, it seats itself by the side of a stream, and scooping up the water in the hollow of its hand, carries it to its mouth, repeating these movements as often as may be necessary to quench thirst, but without ever wetting or rumpling its valued

chin appendage. It is not, however, with all this affectation of nicety, superior to other monkeys in other particulars. It is a good representative of the finical character among men—that individual who is punctiliously careful not to crease a glove, ruffle a hat, or soil a boot, yet in all essential particulars and habits is not one whit better than his fellow-men. M.

**Fits and Starts.**—It is sometimes complained of a great genius that he works by “fits and starts.” The fact, however, is that this is in some cases the natural way of making up the required work. Let us refer to the phenomena of the sea. Instances of commotion in the sea at uncertain intervals—the making, as it were, of efforts by fits and starts to keep up to time in the performance of its manifold offices—are not unfrequent, nor are they inaptly likened to spasms. The sudden disruption of the ice which Arctic voyagers tell of, the immense bergs which occasionally appear in groups near certain latitudes, the variable character of all the currents of the sea—now fast, now slow, now running this way, then that—may be taken as so many signs of the tremendous throes which occur in the bosom of the ocean. Sometimes the sea recedes from the shore, as if to gather strength for a great rush against its barriers, as it did when it fled back to join with the earthquake and overwhelm Callao in 1746, and again Lisbon nine years afterward. Colossal power cannot be expected always to work with the mechanical precision of a watch, and perform a uniform number of movements each minute. T.

**Flagging Energies, Refreshing Influences for.**—In order to watch ants, Huber constructed a vivarium in which they could work, and supplied them with earth, sand, and other necessities. As in this artificial state of existence the insects could not procure moisture from the depths of the earth, moisture from other sources was necessary. Whenever the insects had ceased to work, they could almost always be induced to renew their labors if water was supplied them so as to descend like very fine rain upon the earth. As soon as the formerly quiescent ants felt the shower they regained their activity, ran about with

renewed energy, and set to work upon the soil.<sup>†</sup> In their artificial state they especially needed refreshing influences. So do we in ours. We often feel that we can work no more. Our societies and institutions sometimes seem to come to a standstill. But if some refreshing influence from outside is brought to bear upon us, the whole appearance of things is at once changed. If we take the history of church and chapel debts, and of philanthropic and political societies, we shall have a long record of the instances in which the suspended activities of communities were entirely resuscitated by opportune refreshing influences from without. H.

**Fools as a Species.**—When we see how perverse, ridiculous, and incapable of being made wise are some of the persons who thrust themselves upon public notice, and observe that in all ages and countries the man whom Solomon persistently designates as “the fool” has been a well-known character, we are reminded of what Mr. Darwin says of the goose. He remarks that “this bird deserves some notice, as hardly any other anciently domesticated bird or quadruped has varied so little.” In the year 388 B.C. these birds were kept in the capitol at Rome as sacred to Juno. But the goose has proved inflexible in its organization under long-continued domestication. The chief variation which can be detected is that the bird has increased in size and in productiveness, and varies from white to a dusky color, “The amount of variation which it has undergone, as compared with most domestic animals, is singularly small. This fact can be partially accounted for by selection not having come largely into play. Birds of all kinds, which present many distinct races, are valued as pets or ornaments; no one makes a pet of the goose: the name indeed, in more languages than one, is a term of reproach.” VA.

**“Footprints on the Sands of Time.”**—In the British Isles footmarks of Sauroid animals have been detected in the coal-field south of Edinburgh, and the impressions of the feet of another reptilian animal have been found in the coal-field of the Forest of Dean. American geologists have evidences, in our

lowest Silurian (Potsdam) beds, of numerous trails of animals, probably crustaceans, by which a film of mud or sand formed by one tide was tracked and burrowed before another covered the impressions, and left them to future ages as proofs of layers deposited on the shores of former lands. Some of the coal sandstones in the environs of Manchester, England, exhibit on their surfaces the clearest indications of having been shore deposits, certain tracks having been marked on them by animals which must have crawled at ebb-tides. Longfellow speaks of "footprints on the sands of time"; and here they are literally. In a metaphorical sense we may trace also through the centuries the footprints of our intellectual giants. They are seen in our literature, in our picture-galleries, in our sculpture, in our architecture, and our laws. 51.

**Forces, The Mightiness of Silent.**—We often overlook the mightiness of forces because of their silence. Were we endowed by Nature with a microscopic eye, and were the integuments of plants completely transparent, the world of vegetation would not meet us with that aspect of immobility and repose in which it now presents itself to our senses. The interiors of the cellular structures of vegetables are ceaselessly animated by the most diversified currents, rotary, rising and falling, dividing and ramifying, or altering their direction, as is made manifest by the movement of the granular sap-corpuscles in the leaves of several winter plants (*Najades*, *Characeæ*, *Hydrocharideæ*), and in the hairs of phanerogamous land plants. There is at the same time seen a confused molecular movement, first observed by the distinguished botanist, Robert Brown, but which also occurs among finely divided particles of matter of all kinds, the phenomenon not taking place only within organic cells; the circular movement of the globules of the cambium, in a system of special vessels (cyclosis); lastly, the singular articulated filiform vessels of the anthers of the *Chara*, and the reproductive organs of the liverworts and seaweeds, which have the faculty of uncoiling themselves, and in which Meyen, snatched too soon from science, believed that he recognized the analogues of the



spermatozoa of the animal creation. If to the multifarious excitements and movements we add those that belong to endosmose and the processes of nutrition and growth, and, further, to the penetration (and exhalation) of air, we have a picture of the forces which, almost unknown to us, are active in the silent life of the vegetable world. K.

**Foreknowledge and Prophecy.**—What decides birds to emigrate? It is not want of nourishment, for most begin the journey while they have abundance. Those confined in cages are very restless at the time of their proper migration. Atmospheric currents are not the cause; nor do the changes of season explain it, as the greatest number set off while the weather is yet fine, and others, as the larks and starlings, arrive while the season is bad. Atmospheric influences can only hasten the migration in autumn, or retard or derange it in spring. It is the foreknowledge of what is to happen which determines birds to begin their journey. It is an instinct which urges them, and which initiates them into the meteoric alterations that are preparing. They have a particular faculty of foreseeing the rigor of the coming season, and exquisite sensibility for atmospheric changes which have not yet arrived, but are approaching. Some men are also endowed by Nature with a foreknowledge which is even more wonderful than that which has been bestowed upon the birds. They are furnished with a faculty for foreseeing future events and describing future processes. These men are prophets, and are among the most valuable of the human race. T. B.

**Foresight.**—The “hand-to-mouth” people are a sad nuisance. As long as they have anything which they can consume they will consume it, no matter whether they can do as well without it or not, and when they are in distress through their prodigality they beg. Utterly improvident, wasteful, and self-indulgent, destitute of all foresight, they act like apes. For the ape will indulge himself very completely and recklessly. Covetous of and appropriating everything, he not only lays by no store, in consequence of the abundance of food with which he

is surrounded, but even throws away the food he is eating to possess himself of the next object which attracts him. But the "hand-to-mouth" people need not imitate such antics as these when they know the penalty they always bring. Creatures less like themselves than the ape can teach them a wiser method. For some animals during hybernation always lay up provisions; nor is this precautionary economy confined to that period alone. The satiated spider secures its new captives in its web; and the shrike spits beetles on thorns as a reserve for a future meal. Owls, ravens, magpies, and nuthatches hide their superfluous food; the wolf, the fox, the lynx, and the wild dog bury portions of their food against the next calls of hunger. Even here we have foresight. P.

**Forethought.**—The leopard every day, before going in search of its prey, sharpens its claws on a tree, against which it stretches all its length. Learn from him to prepare yourself for the work you mean to do. Good work needs forethought and preparation quite as much as bad. M.

**Forewarned is Forearmed.**—The negroes of Martinique, who of necessity are assiduous reptile-hunters, state as an incontrovertible axiom, confirmed by immemorial experience, that "a serpent seen is a serpent dead." The *Trigonocephalus* or lance-headed viper (a most poisonous reptile) is only formidable to man when not perceived, and when one treads upon it accidentally in the countries which it inhabits. If the wayfarer be prudent and beat the herbs and bushes as he advances with a switch, the reptile, which is too large to glide away unseen, will reveal itself and take flight. In the open field its defeat and death are inevitable, however little coolness or skill its assailant may possess. D.

**Formalists, The.**—The formalists devote all their energies to modifying or altering the external appearances of things. There are civilized formalists and uncivilized formalists. Among the latter it is in point to refer to those who give their attention to the appearance of the head. Now it is possible to modify the shape of the head very considerably, without inflicting any

great or abiding injury on the mental faculties, by applying compression in a particular way, so as to make the skull assume a different shape from the natural one without lessening its volume or the mass of its contents. Dr. Graves tells us that some of the Indian tribes called *Flatheads* compress the skull laterally, and by this means the head is made to assume a flattened and elongated shape, so that a line passing from beneath the chin to the vertex, instead of measuring seven or eight inches, is nearly twice that length. The origin of this disfigurement is to be traced to that all-prevailing principle, vanity, a flat and elongated head being looked upon by the Indians as an unequivocal mark of nobility and beauty. Other tribes compress the head backward and downward so as to make it project posteriorly in a very curious manner. Which of these modes is the most physiological it is not necessary to pronounce, but they certainly succeed in altering the shape of the skull and brain to a very considerable extent; and what is equally curious, this unnatural treatment does not appear to interfere much with the development of their intellectual faculties. It would appear that though the natural shape of the brain is greatly changed, still this organ retains its usual size and weight. Among the civilized formalists we have those who are always aiming at alteration in the forms of the Church; others, who by an enforced improvement in the customs of society seek to put a new appearance upon the country. The like amount of work expended with an intelligent desire to change the inner character of the people would produce glorious results. Of what consequence are mere forms if the great mind of the world is all right? What can the form, either of the skull or of the institution, matter if the brains are strong and healthy; for if the latter be really all right, of what possible importance is it whether the former have or have not the appearance of being either broad or narrow, expanded or contracted? And if that which is contained in the form be not strong and healthy, how can you produce the strength and the health by merely operating upon the outside form?

s.

**Fortune-Fishing, Running Risks in.**—The Pondicherry eagle (*Haliastur Indus*) is a common and conspicuous species in India. It is seen constantly sailing over the tanks, rice-fields, and rivers at a moderate height, often passing up and down the course of a river, ready to pounce down in a moment at any unlucky fish that may make its appearance at the surface of the water. It usually snatches up its prey from the surface without immersing itself, but occasionally it dips entirely under water, when it experiences some difficulty in rising again with its prey. It then risks its being upon its speculation. In this it resembles the human fisher for fortune. Sometimes he departs from his proper course and stakes upon a novel and greedy adventure his whole nature—his health and his soul. He dives into the very waters of the poisonous Styx to obtain what he wants. He may escape being drawn down into the stream of hell, but it is with difficulty that he rises to enter again into the sunny air of rectitude.

MU.

**Friends, Even the Vile have.**—When the crocodile of the Nile takes his food, his mouth is constantly covered with myriads of insects called *Bdella*, which are no other than European gnats. They fly into the reptile's mouth in such numbers that they cover the entire surface of the palate and form a brownish crust. They pierce the reptile's tongue with their stings, and even excite it to madness. The *Charadrius Ægyptius*, or Nile bird, comes to the rescue. It flies to the mouth of the monster to catch them and deliver him from such innumerable enemies, and is perpetually seeking even in the mouth of the crocodile the insects which form the principal part of its nourishment. The rapacious crocodile, though it lives on flesh, and with one bite could destroy, shows its recognition of the service, and never harms the bird. It would seem that as it is among reptiles, so it is among men; there is none so vile as to be utterly deprived of friends. Even some of our vilest burglars and murderers have been blessed with wives and children who have tended to their necessities and been faithful unto death. Mutual advantage is the bond of union between the

crocodile and the Nile bird ; and it is often (though of course not always) the explanation of many queer human coalitions, from which monsters derive vast advantage. RE.

**Friendship, Emblems of True.**—You may learn a lesson from that prettily marked pilot-fish, with its beautiful purplish-colored back and head, although it is only between four and eight inches long. It is reputed to be a guide to the shark ; and whenever the shark is alone it is a rare occurrence to find him without the attendance of one or two pilot-fish. But when there are several sharks together, the faithful attendant seems too retiring to intrude himself, for he is then absent. If you are a humble friend to any one, learn from this to come when you are wanted, and do not intrude yourself when your company is not required. GA.

**Frothy Period, The.**—The aphrophora lives in froth. In the months of June and July one sees on nearly every tree, and on plants of the most different kinds, a sort of white froth, composed of air-bubbles, deposited on the leaves and branches. It is produced by the aphrophora, which lives in it, and only leaves it when it has wings. The animal which lives in this froth is a six-legged grub. If the 'froth is cleared away from it, it will hurry to certain parts of the stalk of plants, where by dint of its operations on the sap it laboriously creates for itself another covering of froth. If withdrawn from this froth the volume of its body diminishes perceptibly, and the poor grub dies, like a fish taken out of its natural element. There are many beings besides the aphrophora who have their frothy season. The adolescence of the litterateur, the preacher, and the orator is often a period of froth. It should be remembered that this is a mere passing phase of their existence. They grow out of it by the time that their mental wings are strong enough for use. It is unkind to attempt to accelerate the emergence of any one from the froth, for you may unnecessarily destroy a genius who would have raised himself out of it at the proper epoch, and who, until then, will be best left to his bubbles.

**Fuss, Great Effects without.**—Without storm or noise the winds in their usual course accomplish surprising feats. All expanses of shifting sand, whether maritime or inland, like the deserts of Africa and Asia, are yearly modified by the agency of wind-drift, the wind carrying the dry sand left by the tides forward and landward beyond the reach of the waters; and where the ærial current blows steadily for some time in one direction, as the trade-winds and monsoons of the tropics, it will carry forward the drifting material in that direction. Hence the gradual entombment of fields, forests, and villages that lie in the course of such progressive sand-waves as on the Biscay seaboard of France and on the western verge of Egypt. Results like these arise from merely the ordinary operations of wind; its extraordinary operations are manifested in the destructive effects of the hurricane, the whirlwind, and tornado. Gentle as it may seem, the continuous drifting of sand over the surface of hard rocks has been known to wear and polish down their asperities, and even to grind out grooves and furrows like those produced by the motion of glacier ice or the flow of running water. Here then we may observe great effects produced without fuss; and we may easily observe, in the phenomena of social life, that there are plenty of illustrations there of the same principle. The whirlwind of revolutions and hurricane of insurrections have no doubt produced startling consequences. But the influence of noble ideas, spoken by undemonstrative men, or embalmed in unpretending volumes, and of pious lives lived in seclusion, has produced a far greater effect upon the civilization of the world than all the blustering storms of war raised by kings and factions and reverberating through history.

AD.

**Genius, The Irresistible Current of.**—Arctic voyagers tell us of an undercurrent setting from the Atlantic toward the Polar basin. They describe huge icebergs, with tops high up in the air, and of course the bases of which extend far down into the depths of this ocean, ripping and tearing their way with terrific force and awful violence through the surface ice or against

a surface current, on their way into the Polar basin. Captain Duncan, master of the English whale-ship *Dundee*, says at page 76 of his interesting little narrative: "It was awful to behold the immense icebergs working their way to the north-east from us, and not one drop of water to be seen; they are working themselves right through the middle of the ice."† They were moved by an invisible power which no superficial facts could account for. They remind us of those great men in history who, in defiance of all the frozen opposition of the world, have worked themselves onward to the accomplishment of their destiny. Upon the surface of things there has been nothing to account for either their course or their might. Fixed in their places by concrete conventionalities, what is it which has moved them right through all consolidated obstacles? An unseen influence—the stream of genius. The minds which are moved by that current plow their way in splendor through all the world's superficial opposition.

T.

**Genius, The Perpetuating Power of.**—At Knaresborough in Yorkshire is a dripping well, which appears to convert everything into stone. It actually covers over everything with a coating of stonelike material, which of course takes the form of the objects which it incrusts. Mr. Frank Buckland examined, among other things, a pheasant, birds' nests and eggs, all beautifully preserved under a stonelike cover. The reason of the petrification is that the surrounding rocks of the dripping well are composed of magnesium limestone, and the lime becomes dissolved in the spring-water. So highly charged, indeed, is it with mineral matter, that in a gallon of water there are of carbonate of lime 23 parts, sulphate of magnesia 11 parts, and sulphate of lime 132 parts; and a pint weighs 24 grains heavier than common water. The water, by giving up its mineral treasures to all the things within its reach, confers upon them the perpetuity of stone.† The well of human genius possesses a similar power to confer perpetuity. Poetic men have placed all sorts of objects within its influence, and have given them endless duration. Burns brought a "field-mouse"; Coleridge, "an

ass"; Wordsworth, "a kitten"; Byron, "many ladies"; Bulwer Lytton, "the bones of Raphael"; Thomas Moore, "a pretty rose-tree"; Tennyson, "a goose"; Milton, his "deceased wife"; and many other men who are not poetic many other things, and they have been perpetuated by genius, all of them, even to Charles Lamb's "roast pig,"—perpetuated as effectually as if they had been petrified by stone in the well at Knaresborough.

CU.

**Gluttons and Geese.**—The glutton and the goose are alike in many respects. In these days of liver complaints we will take an example of their anatomical resemblance. Look at the size of the liver in the case afforded by the celebrated Strasburg geese. By feeding these geese in a particular way, and keeping them in artificial heat, the liver becomes diseased, grows to an enormous size, and in this way furnishes the materials of a *pâté* much sought after by the scientific gourmand. How many instances occur where our citizens, exposing themselves to the long-continued operation of the very same causes—confinement, overfeeding, heat, and want of exercise—are affected by them exactly in the same way! How slight the difference between the morbid phenomena displayed in the *post-mortem* of a city feaster and the *autopsy* of an overfed goose!

S.

**Gluttony, The Fate of.**—The favorite haunt of the *Python* is the low marshy ground, rank with moist herbage, where they prey upon birds and small animals, swallowing them whole—swallowing them even alive—after having seized them in the invincible folds of their long sinuous bodies, and always commencing with their hinder parts. So greedy a repast must necessarily be followed by a slow and difficult digestion, and cannot be renewed at any very brief interval. They eat in effect but once a month, or once in two months. During the lethargic and semi-somnolent condition which invariably follows their debauch, they fall easy victims to the attacks of their enemies.

D.

**God, Human Opinions Concerning.**—It cannot be too clearly impressed upon the inquirer that human opinions re-



specting God have frequently merely the effect of obscuring the glories of God. They are only the media, often the dense and unhealthy media, through which certain human intelligences look at Him; and so far from revealing Him, they, rising from impure sources, obstruct the clear view which under other influences might be obtainable. Let men's opinions in different ages and lands be what they may respecting God, He is still absolutely the same and unchanged. That which changes is the human opinion or medium through which men gaze. And it is pestilent or wholesome according to an infinitude of circumstances. Sometimes we see the sun with absolute clearness. When there are less favorable conditions it is enveloped in dimness. But the change is not in the sun: it is contingent upon the exhalations of sublunary things: For it is evident that at each hour of the day the solar rays come from the parts above the atmosphere with the same power whether the sky be clouded or clear. If no cloud intervenes, all the rays come to the surface of the earth and heat it, but if one half or one fourth of them should be intercepted by cloud, only the other half or three fourths of the rays can affect the surface; and when the whole sky is covered with dense clouds, the greater part of the solar rays will be intercepted by them. ON.

#### **Gold and Silver, The Accuracy of Job's Reference to.**

—The fear that gold may be greatly depreciated in value relative to silver (a fear which at one time seized upon the minds of some people) seems unwarranted by the data registered in the crust of the earth; for looking to all the recent discoveries, we may be assured that gold is much the most restricted (in its native distribution) of the precious metals. Argentiferous lead, on the contrary, expands so largely downward into the bowels of the rocks as to lead us to believe that it must yield enormous quantities of silver for ages to come, and the more so in proportion as better machinery and new inventions shall lessen the difficulty of subterranean mining. It may indeed well be doubted if the quantities both of gold and silver procured from regions unknown to our progenitors will prove more than suffi-

cient to meet the exigencies of an enormously increased population and our augmenting commerce and luxury. And the author of "Siluria" as a geologist says that Providence seems to have adjusted the relative value of these two precious metals for the use of man, and that their relations, having remained the same for ages, will long survive all theories. Modern science, in short, instead of contradicting, only confirms the truth of the aphorism of the Patriarch Job, which thus shadowed forth the downward persistence of the one and the superficial distribution of the other: "Surely there is a *vein* for the silver. . . . The earth hath *dust of gold*." SI.

**Good Feeding, The Political Value of.**—Zimmermann has correctly observed that "hunger is the mother of impatience and anger." Those of the ruling classes who are quick to denounce, and ready to be apprehensive of the mob, would do well to bear this in mind. Depend upon it, good feeding has a far greater political value than they suppose. History does not furnish accounts of riots, uproars, or atrocities committed by well-fed mobs. A hungry mob is a dangerous mob. If the supercilious politician has no real sympathy whatever with the people, he should still even as a measure of expediency do what he can to feed them if he fears them. He may look upon the hungry classes as very inferior creatures, but he will find they are uncommonly like himself in being easily accessible to the influences of good feeding. The serpents of faction, however much they hiss around the altars of sedition, are much like other serpents. Whenever any of the serpent kind have gorged themselves to a great extent, whenever their body is seen particularly distended with food, they then become torpid, and may be approached and destroyed with safety. Patient of hunger to a surprising degree, whenever they seize and swallow their prey they seem like surfeited gluttons, unwieldy, stupid, helpless, and sleepy; they at that time seek some retreat, where they may lurk for several days together and digest their meal in safety: the smallest effort at that time is capable of destroying them; they can scarcely make any resistance, and they are

equally unqualified for flight or opposition. That is the happy opportunity of attacking them with success; at that time the naked Indian himself does not fear to assail them, and the most timorous politician would not be too cowardly to follow. A proverb in the Efik language says: "It is the stomach which rules the man."

A.

**Good Found where Least Expected.**—The eggs of the turtle are thought as great delicacies as its flesh; and it is rather a remarkable fact, that although the flesh of the hawk's-bill turtle is distasteful to all palates, and hurtful to many constitutions, the eggs are both agreeable in flavor and perfectly harmless.

IL.

**Great, The Loneliness of the.**—Great men, as a rule, are not club-men. The thinkers of the world have not been society fractions. In their isolation they remind us of the oak, which is never seen in a crowd, forming what may be properly termed a wood. An oak forest is nothing more than a poetical figure; for the oak stands alone, or mingled with other trees of different foliage, which it dominates with venerable feudal sovereignty. We have one Dr. Johnson and a number of Boswells round about him.

ST.

**Great Britain, Healthfulness of.**—The following is a comparative estimate of the rate of mortality in the European states: One in twenty-eight in the Roman and Venetian states; one in thirty in Italy in general; one in thirty in Greece and Turkey; one in thirty-nine in the Netherlands, France, and Prussia; one in forty in Switzerland, Austria, Spain, and Portugal; one in forty-four in European Russia and Poland; one in forty-five in Germany, Denmark, and Sweden; one in forty-eight in Norway; one in fifty-three in Ireland; one in fifty-eight in England; one in fifty-nine in Scotland and Iceland; so that we perceive that the duration of life in Great Britain is very great when compared with others, and that whatever foreigners may say about its dull and foggy climate, it is a fact that its inhabitants live much longer than those of the sunny climes of southern Europe. The boasted climate of Italy, with its soft

vernal breezes and cloudless skies, gives a mortality of one in thirty, whereas among the Irish bogs it is only one in 'fifty-three; while in the Roman and Venetian states more than twice as many out of a given number die as among the bleak districts of the Scotch Highlands. It is, then, perfectly well ascertained that in England, Ireland, and Scotland the mortality is much lower than in the poetic "lands of the sun," Italy and Greece.

S.

**Great is Composed of the Small, Everything.**—Let us contemplate a drop of rain, multiplied raindrops, and their influence. Few persons have ever taken the trouble to compute how much the fall of a single inch of rain over an extensive region in the sea, or how much the change of even two or three degrees of temperature over a few thousand square miles of its surface, tends to disturb its equilibrium, and consequently to cause an aqueous palpitation that is felt from the equator to the poles. Let us illustrate by an example: the surface of the Atlantic Ocean covers an area of about twenty-five millions of square miles. Now let us take one fifth of this area, and suppose a fall of rain one inch deep to take place over it. This rain would weigh three hundred and sixty thousand millions of tons; and the salt which, as water, it held in solution in the sea, and which, when that water was taken up as vapor, was left behind to disturb the equilibrium, weighed sixteen millions more of tons, or nearly twice as much as all the ships in the world could carry at a cargo each. It might fall in an hour, or it might fall in a day; but occupy what time it might in falling, this rain is calculated to exert so much force—which is inconceivably great—in disturbing the equilibrium of the ocean. If all the water discharged by the Mississippi River during the year were taken up in one mighty measure, and cast into the ocean at one effort, it would not make a greater disturbance in the equilibrium than would the fall of rain supposed. Now this is for but one fifth of the Atlantic, and the area of the Atlantic is about one fifth of the sea-area of the world; and the estimated fall of rain was but one inch, whereas the average for the year is sixty inches,

but we will assume it for the sea to be no more than thirty inches. In the aggregate, and on an average, then, such a disturbance in the equilibrium of the whole ocean as is here supposed occurs seven hundred and fifty times a year, or at the rate of once in twelve hours. When we reflect that this mighty work is accomplished by multiplied raindrops, we cannot but remember the old Latin proverb, that "Everything great is composed of many things which are small." In further illustration of the same truth are the words of Young:

"Sands form the mountain, moments make the year." T.

### **Great Tyrants Sometimes Succumb to Small Heroes.**

—The *Raptors* are daring, cruel, and strong, yet, like other tyrants, they can be frightened. We read in Wilson that a tiny bird, a flycatcher, such as the purple martin, will hunt the great black eagle, pursue it, harass it, banish it from its district, give it not a moment's repose. It is a truly extraordinary spectacle to see this little hero adding all his weight to his strength that he may make the greater impression, rise and let himself drop from the clouds on the back of the large robber, mount without letting go, and prick him forward with his beak in lieu of a spur. David in his dealings with Goliath, and other men in all lands and times, show us that in the human family, as among the feathered tribes, great tyrants will often succumb to small heroes.

T. B.

**Greatest Good Occasioning the Greatest Evil, The.**—By universal consent religion is man's greatest blessing; and water is the greatest boon of the thirsty all the world over. Yet what a confirmation both religion and water afford of the fact that the greatest good may occasion the greatest evil! Take, first of all, the illustration supplied by the water, and in the words of Oliver Goldsmith. In those burning countries where the sun dries up every brook for hundreds of miles round, when what had the appearance of a great river in the rainy season becomes, in the summer, one dreary bed of sand, a lake that is

never dry, or a brook that is perennial, is considered by every animal as the greatest convenience of Nature. As to food, the luxuriant landscape supplies that in sufficient abundance; it is the want of water that all animals endeavor to remove, and, inwardly parched by the heat of the climate, traverse whole deserts to find out a spring. When they have discovered this, no dangers can deter them from attempting to slake their thirst. Thus the neighborhood of a rivulet in the heart of the tropical continents is generally the place where all the hostile tribes of Nature draw up for the engagement. On the banks of this little envied spot thousands of animals of various kinds are seen venturing to quench their thirst, or preparing to seize their prey. The elephants are perceived in a long line, marching from the darker parts of the forest; the buffaloes are there, depending on numbers for security; the gazelles, relying solely upon their swiftness; the lion and tiger, waiting a proper opportunity to seize; but chiefly the larger serpents are upon guard there, and defend the accesses of the lake. Not an hour passes without some dreadful combat; but the serpent, defended by its scales, and naturally capable of sustaining a multitude of wounds, is of all others the most formidable. Ever on the watch until their rapacity is satisfied, few other animals will venture to approach their station. Now take the illustration which religion supplies of the fact that the greatest good may occasion the greatest evil. The splendid anthem of Spohr only tells us, in beautiful music, the fact which history in unmusical language proclaims, that as the hart pants after the water, so all souls seek after God. Here, then, is admitted to be the great source of all good. How have men approached that source? Do you find peace, love, charity, and all happiness characterizing their proceedings? Look at the religions of the world, with their cruelties and barbarisms; listen to the brayings of cant and the howlings and ravings of sectaries and bigots, and notice the insidious craft and poisonous malice with which some of the smooth zealots do their work! Behold how fiercely they fight among one another; how eagerly they pounce upon any who

are not of their number, but whom they descry afar off, eagerly seeking after the source of All-purity; and how desperately they struggle, each with each, for the mastery and capture of the anxious humble seekers of living water! What brings all these rampant men together, and occasions this hoarse clamor of coarse voices where we anticipated gentle forms and loving sounds? The banks of the river of life have brought them there, and by their presence they occasion the greatest evil where we have a right to expect the greatest good. A.

**Greediness, Insatiable.**—Insatiable greediness appears to characterize all the movements of some men. Everything they do has for its object the acquirement of some benefit for themselves. They resemble the fishes whose ruling impulse is the desire to obtain something. This appetite compels them to encounter every danger, and indeed their rapacity seems insatiable. Even when taken out of the water and almost expiring, they greedily swallow the very bait by which they were allured to destruction; just as the miser at the point of death will still excite himself about obtaining more of the gold which has been his ruin. A.

**Greedy Disposition, The.**—The king-vulture will not permit any other bird to begin its meal until his own hunger is satisfied. The same habit may be seen in many other creatures, including some men, the more powerful lording it over the weaker, and leaving them only the remains of the feast instead of permitting them to partake of it on equal terms. If the king-vulture should not happen to be present when the dead animal has reached a state of decomposition which renders it palatable to vulturine tastes, the subject vultures would pay but little regard to the privileges of their absent monarch, and would leave him but a slight prospect of getting a meal on the remains of the feast. Thus the greedy disposition, whether in the high or low, never concerns itself about the want of others. IL.

**Gross Natures in Useful Employment.**—The pig is an important auxiliary in keeping rattlesnakes at a distance in countries where they abound. In the west and south of America

when a field or farm is infested by these ferocious reptiles it is usual to put a sow with its young brood there, and the snakes, it is said, will soon be eaten up. It appears that, owing to the fatty matter which envelops the body of this animal, it is safe from the venomous bite. Besides, it likes the flesh of the snakes, and eagerly pursues them. When a pig sees a rattlesnake, it smacks its jaws and its hairs bristle up: the snake coils itself up to strike its enemy; the pig approaches fearlessly, and receives the blow in the fold of fat which hangs upon the side of its jaw. Then he places a foot on the tail of the snake, and with his teeth he begins to pull the flesh of his enemy to pieces, and eats it with evident enjoyment. # Infidelity, intemperance, and tyranny are horrible social reptiles, and they are often successfully attacked by ferocious, illiterate, gross "revivalists" and demagogues, who bristle up to their work of annihilating them on a method and with a zest not inferior to this rattlesnake-destroyer. These men are not pleasant beings, but like those other coarse creatures, they are useful for coarse work. Their grossness is their qualification; for the stings and wounds by which the progeny of vice would kill other public men do not affect that bloated self-complacency and dense coarseness in which their rude nature is entirely enveloped. And our feelings of loathing and disgust for these rough sons of coarseness should always be tempered by the remembrance that they are not quite so bad as that which they destroy. The pig, after all, is better than the rattlesnake.

RE.

**Habit, The Force of.**—It is, as Mr. Darwin says, notorious how powerful is the force of habit. The most complex and difficult movements can in time be performed without the least effort or consciousness. It is not positively known how it comes that habit is so efficient in facilitating complex movements; but physiologists admit that the conducting power of the nervous fibers increases with the frequency of their excitement. This applies to the nerves of motion and sensation as well as to those connected with the act of thinking. That some physical change is produced in the nerve-cells or nerves which



are habitually used can hardly be doubted, for otherwise it is impossible to understand how the tendency to certain acquired movements is inherited. That they are inherited we see with horses in certain transmitted paces, such as cantering and ambling, which are not natural to them; in the pointing of young pointers and the setting of young setters; in the peculiar manner of flight of certain breeds of the pigeon, etc. We have analogous cases with mankind in the inheritance of tricks or unusual gestures. As to the domination which evil habit acquires over men, that needs not even a passing allusion. It is remarkable that the force of habit may affect even caterpillars. Caterpillars which have been fed on the leaves of one kind of tree have been known to perish from hunger rather than to eat the leaves of another tree, although this afforded them their proper food under a state of Nature. Their conduct might suggest reflection to men who are tempted by habit to risk death by adherence to debauched courses rather than return to a natural mode of living.

EX.

**Habit, Age Altering.**—A few years often change the habits of a man. The middle-aged man has scarcely any of the habits of the youth left. And if the proof of his identity depended on their resemblance, it would indeed be hard to establish. A like change of habit is observable in many other existences. We may take from a class of mollusks the acorn-shells (*Balanus balanoides*) as an example. It is a very remarkable fact, that although the *Balanus* never moves from the spot on which it has taken up its habitation, and, indeed, is incapable of any kind of locomotion, yet when very young it was an active, wandering little creature, furnished with jointed limbs, much resembling a shrimp or crab, and swimming freely through the water with a succession of bounds. What a complete settling down to quiet ways! what a thorough transformation is here! But is it more striking than the metamorphosis of the hobble-dehoy youngster into the sedate sage?

D.

**Half-Truths and Hemipopia.**—There is an affection called *hemipopia*, in which the patient can only discern a part or the

half of an object. He may see a man walking without head and shoulders; or with the upper portion of his frame hovering in the air, but no lower limbs to sustain it; or with a trunk like a mutilated statue; or with a body which has only a single eye, half a nose, half a chin—appearing, in fact, to be sliced down the center, as if the one moiety were not only divorced from the other but absolutely annihilated. Dr. Wollaston was twice attacked in this manner, and states that he could perceive but half of an individual whom he met, and that on attempting to read the name of Johnson over a door, he saw only “son.” There is a mental *hemipia*. The men who are affected by it are never able to see the whole of any question. They are often emphatic in stating precisely that which they do see, because their vision respecting that is clear enough. These enunciations of theirs constitute the “half-truths” which we so constantly meet with in society, in books, and in legislation. Men who are affected with mental *hemipia* are, as an almost universal rule, quite unconscious of the fact. The great difficulty in making them aware of it arises from a strong hallucination which accompanies the disease and assures the sufferer that he is exceptionally strong and perfect in his mental vision. People affected in this way will often declare that they have discovered, and can proclaim, “the whole truth of God,” the fact being that they have barely seen half of it. Mental *hemipia* is either chronic or acute. The former is incurable. The latter will yield to judicious treatment and the removal of the proximate and exciting cause, which is usually passion, avarice, bigotry, love, or jealousy. P.

**Hangers-on.**—The remora, instead of swimming far by its own exertions, greatly prefers being transported from place to place on ships’ bottoms, or even the bodies of sharks. When one of the sharks to which a remora is clinging is caught by a hook, and is pulled out of the water, the little parasite is shrewd in its own interest, for it drops off and makes for the bottom of the ship. As long as a ship remains within the tropics, numbers of remoræ cling to its bottom, whether that be coppered

or not, whence they dart off occasionally to pick up any morsels of greasy or farinaceous matter that may be thrown overboard, retiring again rapidly to their anchorage. These hangers-on resemble our social ones in the following particulars: they like traveling about; they do not care what they attach themselves to so long as it suits their purpose for the time; they will not get along by their own exertions if they can find others to carry them; they are sharp in their own interests, and know quite well when to desert a supporter; and they are ready to avail themselves of discarded or accidental aliment. MU.

**Happiness is Relative.**—The *Pelonæa corrugata* is remarkable as much for its habits as its shape. It is not fixed to any object, but is as motionless as if it were attached to a rock, and seems to pass a singularly unenjoyable existence. Yet it is doubtlessly happy in its own way, though that way is a very strange one. It lives embedded in the mud, its whole body being sunk, and only the ends of the two apertures projecting into the water. The existence led by some men and women seems almost as much at variance with our antecedent notions of a happy life as is that of this *Pelonæa corrugata*. Their sluggish, impassive natures grovel in low pursuits, and never move about among the intelligent currents of human society. No doubt their existence has its pleasures. Happiness is a relative thing. The *Pelonæa corrugata* would find no gratification in the conditions of life which the mackerel enjoys. The delights of a clown would be misery to a sage. C. S.

**Harmless yet Armed.**—The hedgehog is one of the most harmless animals in the world. Unable or unwilling to offend, all its precautions are only directed to its own security; and it is armed with a thousand points to keep off the enemy, but not to invade him. While other creatures trust to their force, their cunning, or their swiftness, this animal, destitute of all, has but one expedient for safety; and from this alone it finds efficient protection. As soon as it perceives itself attacked, it withdraws all its vulnerable parts, rolls itself into a ball, and presents nothing but its defensive thorns to the enemy. Thus,

while it attempts to injure no other quadruped, they are equally incapable of injuring it. One might suppose that the noisy dog with its sharp teeth was more capable of defending himself than this quiet animal, but it is not so. Indeed it is by no means certain that the very defiant-looking creatures are the most invulnerable. Quiet men and peaceable nations are often quite as well able to defend themselves as those who swagger about their defensive power. Inoffensiveness does not mean helplessness, though the cur thinks it does when he essays to worry the hedgehog, and cur-natures think so under all circumstances.

A.

**Harmony where Least Expected.**—Before Captain Maury's researches, ocean appeared to the most judicious observers as nothing more than a grand mass of water, inert, passive, obedient to blind and changeful forces. He has demonstrated, however, that there, as in all other parts of the economy of Nature, harmony and order reign; that everything is planned, weighed, and compensated; and more, that ocean is endowed with a combination of movements similar to those which nourish life in the plant and the animal; that it has a circulation, free and regular as that of the blood; a pulse ever throbbing and beating; veins and arteries, ay, and a heart; and that beyond the purely physical causes to which we may attribute this circulation, there exists an essential agent which we should seek in vain elsewhere, a vital force—that of the myriads of invisible beings which are born, live, multiply, and die in the teeming womb of its waters. Each of these imperceptible existences changes the equilibrium of the ocean; they also help to regulate the climates of the earth and to preserve the purity of the seas. The principal agents of this circulation are three in number. The first and most apparent is caloric, the solar radiation; but of itself this would be insufficient. The second and most important is the salt. The third is the animal life—the “living infinite of the sea,” as Michelet calls it—the infusoria. Truly, as we contemplate this wonderful arrangement we may say, “He divideth the sea with His power.”

MY.

**Hateful to the Happy, Through the.**—Few of our joys are ever reached until we have journeyed through much that is vexing and hateful. To endure the vexing and the hateful, moreover, we often need to think of the goal beyond. Our road is often like that leading to a place named Wâdy Nassoub, situated a short distance from Sarabit-el-Kadim, on the road from Sinai to Suez. It is gained after traversing Ramleh ("the sandy"), a sandy ravine which serves as a retreat for horrible black serpents, both big and little, and for enormous lizards. It is followed by a narrow valley, "Wâdy Nassoub," one of the most magnificent spectacles in the world. It is a circuit of twenty to twenty-five leagues in extent, surrounded by huge rocks arranged in successive terraces, and of incomparable beauty of form and color. Its arena is an immense sheet of black basalt, furrowed here and there by torrents of yellow sand. A dazzling sun kindles up this landscape, which is one of incredible splendor. The traveler can now afford to look back triumphantly on the serpents in the valley he has passed; and as he does so, his position is not unlike that of him who, having borne himself nobly in the journey of life, and having attained a glorious consummation, looks back at the vexations he has passed forever.

D.

**Heads Worth Little, Some.**—If a man loses his head, he dies immediately; but an insect is not nearly so fastidious, and continues to live a long time without any head at all. Indeed there are some insects, which, if beheaded, die not so much on account of the head, but of the stomach; for having then no mouth, they cannot eat, and so die of hunger. And some insects there are which positively live longer if decapitated than if left in possession of their head.

C. O.

**Health, The Sun a Source of.**—"Where there is sun there is thought." All physiology goes to confirm this. Where is the shady side of deep valleys there is cretinism. Where are cellars and the unsunned sides of narrow streets there is the degeneracy and weakness of the human race, mind and body equally degenerating. Put the pale withering plant and human

being into the sun, and, if not too far gone, each will recover health and spirit.

I. L.

**Heavenly Bodies, The Ministration of The.**—In Arctic regions the moon and the stars alone temper the darkness of the long winter's night, and all who have read the story of polar voyages will recollect the thankfulness with which the moonlight is welcomed. The Arab of the desert steers on emergency by the light and position of the moon. Over the pathless seas the moon, is the navigator's friend and counselor, and places within his reach a sure means for measuring the longitude and fixing the spot where the ship may be. #When we think of the fleets of noble vessels with their wealth of merchandise, and the thousands of lives whose safety is dependent on its teachings, we may form some estimate of the value of this blessing. "Without the moon's aid," an astronomer observes, "our ships, instead of fearlessly traversing the ocean from pole to pole, would probably even now be incapable of performing long voyages, and would content themselves with exchanging commodities and intelligence between well-known and neighboring shores."

BE.

**Hereditary Peculiarities, The Transmission of.**—Tendencies to particular vices are inherited, and are exhibited in cases where the early death of parents, or the removal of the children in infancy, prevents the idea of any imitation or effect of education being the cause. That the organization of a thief is transmitted from father to son through generations seems tolerably certain. Gall has cited some striking examples. And murder, like talent, seems occasionally to run in families. Parents with an unconquerable aversion to animal food have transmitted that aversion; and parents with the horrible propensity for human flesh have transmitted the propensity to children brought up away from them under all social restraints.

PH.

**Hereditary Results.**—It appears that many habits, physical as well as moral, are to a remarkable extent hereditary; of this we could adduce numerous instances. The hereditary

tendency to certain moral or immoral habits in particular persons has long been known; and it has been frequently remarked that the offspring of such individuals share in the same tendencies, and are exposed to the same dangers in passing through life. The same hereditary resemblance exists, also, with respect to certain habits of body. Thus if the parents are accustomed to the use of a certain species of aliment, the same will be found to agree with their offspring. Our infants would soon sicken and die if obliged to take the food on which the infants of the Greenlander and Esquiman subsist and thrive. s.

**Hidden Enemies.**—Nocturnal birds of prey fly without making the least noise. They can, therefore, pounce unawares on their victims, seizing them before they have any idea of necessity for escape. When they lay hold of their prey it is immediately devoured. But their large staring eyes cannot bear the light of midday. They therefore remain hidden in their retreats while the sun is high, and do not begin to hunt until the luminary has approached the horizon, when they are able to distinguish with surprising clearness the objects on which they prey. # Some of a man's human enemies resemble these birds. They never attack openly in the daylight. They are sly and quiet, and pounce upon their victim before he is aware of their approach, and when surrounding conditions are such as to prevent his being able to defend himself. RE.

**Hideous Implies the Dangerous, The.**—There is a close connection between ugliness and vice. Among human beings a hideous expression of face usually implies a wicked person, excepting, of course, in cases where it is accounted for by illness or accident. There are men whose badness is written in repulsive characters upon their complexions, so that any observer may avoid them. Not only so. It curiously happens that in some of the creatures whose rage is likely to be fatal to man, there should be something in the physiognomy which puts him on his guard. It is so in regard to the sharks; it is so in the crocodiles; it is so preëminently in the venomous serpents. # There is in most of these an expression of malignity which well

indicates their deadly character. Their flattened head, more or less widened behind, so as to approach a triangular figure; their wide gape, and the cleft tongue ever darting to and fro; and, above all, the sinister expression of the glaring, lidless eye, with its linear pupil, are sufficient to cause the observer to retreat with shuddering precipitancy. Darwin, speaking of a sort of viper which he found at Bahia Blanca, says: "The expression of this snake's face was hideous and fierce; the pupil consisted of a vertical slit in a mottled and coppery iris; the jaws were broad at the base, and the nose terminated in a triangular projection. I do not think I ever saw anything so ugly, excepting, perhaps, some of the vampire bats." RO.

**Higher Life Requires the Higher Aliment, The.**—The air which has once passed through the lungs of a man, and which, in losing four or five percent. of its oxygen, has become charged with three or four percent. of carbonic acid, will yield but very little of its remaining oxygen when again passed through the lungs; and if this air be breathed over and over again until the sense of suffocation force a cessation, the air will still be found to contain ten percent. of oxygen—that is to say, nearly half of its original quantity. In air thus vitiated the respiratory process is impossible, but *only impossible for warm-blooded animals in health*: frogs, reptiles, fish, and mollusks, instead of perishing when the air has lost about half its oxygen, continue to breathe and absorb oxygen almost as long as there is any left. Spallanzani, Humboldt, and Matteucci have placed this beyond a doubt by their experiments. It is equally beyond a doubt that in the intellectual world also the higher life requires the higher aliment. The conversation which will kindle and sustain all the vitality of a number of weak-minded gossips will cause a man of intellect to experience a sensation of suffocation. The intellectual atmosphere of some churches and chapels, which is fully adequate to the wants of a certain tepid order of mind, who can exist on the same truth uttered over and over again, is one in which men composed of vigorous brain and warm heart could not possibly exist. Their nourishment can only be derived where purity and light abound. PH.



**Hissing.**—As a fact, hissing is the only sound in Nature which makes no echo. If criticism, at the meeting or at the desk, be naught but hissing, and can do naught but hiss, it is altogether a poor affair, and will awaken no echo of sympathy. Therefore an earnest man may ignore it when it assails him in his endeavors to do good. He should go on his course remembering the ancient words of Sanāi: "What matters it whether the words thou utterest for religion are Hebrew or Syrian, or whether the place in which thou seekest for truth is Jâbalkâ or Jâbalsâ." G. S.

**Home Associations, Power of Early.**—Early home associations have a far more potent influence than is generally supposed. Some natures, of course, are more susceptible to them than are others, but over many men they have a sovereign power. Nor is their influence confined to the human family. The affection of birds is frequently extended to their own haunts, and they cling with constancy to the place where they were born. Nightingales, swallows, and many others find their way back to the spot where their early days were spent, and often to the very nest homes with which their joys were associated. † Everybody knows with what fidelity rooks stick to their native trees, and how doggedly they resist every effort to dislodge them. Though all the trees of the country are open to their choice, rooks sometimes prefer a nest in a solitary tree in some great city, because it is the home where they were born. For eight months of the year not a bird, perhaps, is to be seen there; but with commencing spring the constant rooks, winging their way over streets and houses, once more appear and set about patching up the old nest. BE.

**Home Instinct, The.**—Swallows (*Hirundo*) are celebrated for their migratory journeys. In the early days of spring they reach Europe, not in flocks, but as isolated individuals or in pairs. They occupy themselves almost immediately either in repairing their last year's nests, or, if these have been destroyed, in constructing new ones. Among the arrivals are many young birds of the previous year which have not had nests; and yet it is not a little extraordinary that these, after six months' ab-

sence, return with unerring certainty to the old dwelling where hatched. This fact has been too often recorded to admit of any doubt on the subject. This home instinct exists, also, very strongly in some families of men. Though the various members may roam far and wide over the whole surface of the world, they return always to the old birthplace, impelled by an impulse which seems irresistible, and which operates independently of the fact that the companions of the old place have departed this life.

RE.

**Home-Leaving.**—When the adult termites of southern America leave their homes they fly off in large clouds, but as soon as they touch the ground they shed their wings, and then they begin to find how many enemies they have. Of the myriad host that pour into the evening air, not one in twenty thousand survives. They have foes above, below, and on every side. The bats and goat-suckers hold high festival on these evenings when the termites are abroad; and after the insects have cast their wings they are pursued by ants, toads, spiders, and a host of other enemies. Yes, the loss of the home wings is a crisis, not only in the life of the termites, but in that of men. A young man flies off from home with his companions, full of high hopes, and settles himself down, as he thinks, in some suitable place. He is no sooner settled than his troubles commence. When soaring aloft he had no conception of the fact that he was to be at once set upon by enemies and troubles, nor in his home dreams did he suspect their number or their nature. Happy is he if he saves himself from the spiders of the law, the toads of malice, and the many social grubs who are ready to ruin him.

H.

**Horrible very Arbitrarily Chosen, Emblems of the.**—Painters always represent their imps as upborne by bats' wings, furnished with several supplementary hooks; and sculptors follow the same principle. In consequence all bats and objects connected with bats are viewed with great horror. It is said that the African negroes depict and describe *their* evil spirits as white; and that, in consequence, the negro children fly in

consternation if perchance a white man comes into their territory. Yet the white man is not so horrid an object after all if one only dare look at him; and the same remark holds good with the bats.

C. O.

**Hospitality, A Test for.**—If the two hands be plunged, one in water at the temperature of  $200^{\circ}$ , and the other in snow, and being held there for a certain time are transferred to water of the intermediate temperature of  $100^{\circ}$ , this water will appear warm to one hand and cold to the other—warm to the hand which has been plunged in the snow, and cold to the hand which has been plunged in the water at  $200^{\circ}$ . The anomaly is easily explained. The sensation of heat is relative. When the body has been exposed to a high temperature, a medium which has a lower temperature will feel cold, and when it has been exposed to a low temperature, it will feel warm. ~~Now~~ this fact will suggest, by analogy, a way for testing hospitality. It is not uncommon to hear a man speak about the “warmth” of somebody’s hospitality. Perhaps that same “warmth” seemed very much like coldness to us. How are we to explain the difference in the sensations of our friend and ourselves? Simply by remembering that hospitality, like heat, is a relative thing. A man who has just come out of the cold house of Mrs. Niggard will feel the tepid house of Mrs. Moderate to be quite a warm, hospitable place. On the other hand, a man who goes to Mrs. Moderate’s house after a prolonged stay at the genial mansion of the generous Lady Bountiful, will feel that establishment to be rather chilly in its hospitality. When your friend talks of “warm” hospitality, you cannot accurately gage his meaning unless you know the temperature of the hospitality which he has accustomed himself to.

HA.

**Human Body Constructed on Musical Principles, The.**—The universal disposition of human beings, from the cradle to the death-bed, to express their feelings in measured cadences of sound and action, proves that our bodies are constructed on musical principles, and that the harmonious working of their machinery depends on the movements of the several parts being

*timed* to each other, and that the destruction of health as regards both body and mind may be well described as being put out of tune. Our intellectual and moral vigor would be better sustained if we more practically studied the propriety of keeping the soul in harmony by regulating the movements of the body; for we should thus see and feel that every affection which is not connected with social enjoyment is also destructive of individual comfort, and that whatever tends to harmonize also tends to promote happiness and health. U.

**Human Society, An Archetype of.**—The picture of a bee-kingdom, which Shakespeare has drawn in the following lines, has the precision of a naturalist, united to the fancy of a poet and the wisdom of a philosopher:

“ So work the honey-bees,  
Creatures that by a rule in Nature teach  
The art of order to a peopled kingdom.  
They have a king, and officers of sorts,  
Where some, like magistrates, correct at home;  
Others, like merchants, venture trade abroad;  
Others, like soldiers, armed in their stings,  
Make loot upon the summer’s velvet buds;  
Which pillage they with merry march bring home  
To the tent royal of their emperor:  
Who, busied in his majesties, surveys  
The singing masons building roofs of gold;  
The civil citizen kneading up the honey;  
The poor mechanic-porters crowding in  
Their heavy burdens at his narrow gate;  
The sad-eyed justice with his surly hum  
Delivering o’er to executors pale  
The lazy, yawning drone.”

B. W.

**Human Sympathy.**—No part of the world affords a more difficult or dangerous navigation than the approaches of our northern coast in winter. Before the warmth of the Gulf Stream was known, a voyage at this season from Europe to New England, New York, and even to the capes of the Delaware or Chesapeake, was many times more trying, difficult, and dangerous than it now is. In making this part of the coast, vessels are

frequently met by snow-storms and gales which mock the seaman's strength and set at naught his skill. In a little while his bark becomes a mass of ice; with her crew frosted and helpless, she remains obedient only to her helm, and is kept away for the Gulf Stream. After a few hours' run she reaches its edge, and almost at the next bound passes from the midst of winter into a sea ~~at~~ <sup>of</sup> summer ~~heat~~ <sup>sun</sup>. Now the ice disappears from her apparel; the sailor bathes his stiffened limbs in tepid waters; feeling himself invigorated and refreshed with the genial warmth about him, he realizes out there at sea the fable of Antæus and his mother Earth. He rises up and attempts to make his port again, and is again as rudely met and beat back from the northwest; but each time that he is driven off from the contest, he comes forth from this stream, like the ancient son of Neptune, stronger and stronger, until, after many days, his freshened strength prevails, and he at last triumphs and enters his haven in safety. His experiences bear a resemblance to those of the man who is tempest-tossed upon the sea of social life. This man, struggling in what Shakespeare designates "a sea of troubles," has to brave great billows of adversity and to face the chilling blasts of misfortune. He is well-nigh hopeless and powerless, when he suddenly encounters the warm stream of human sympathy which flows even into society's most icy regions. Under its vitalizing influences the horrors of his despair melt away; his heart glows with renewed hope; he is nerved with fresh strength for a successful struggle against his calamities, so that he is able at length to accomplish his destined purpose.

T.

**Humility, The Fecund Force of.**—The little and the lowly may be found in combination with wondrous energy. The coralline (*Corallina officinalis*), which may be found most abundantly on any of our coasts, growing in greatest perfection near low water-mark, is a small plant seldom exceeding five or six inches in height, and not even reaching that size. However, it compensates for its low stature by its luxuriant growth, being usually found in dense masses wherever it can find a convenient

shelter. If the vital force of this plant had shot upward, pushing out numerous and majestic branches in the air, and covering itself with abundant leafage and blossom, it would have attracted more attention and admiration, but it would not have gained force, or perhaps usefulness, thereby. Thus with human minds. Those whose powers shoot upward by some splendid feat of genius in literature or battle, arrest public attention and win public plaudits. Whereas possibly they neither gain more strength nor achieve more usefulness than those less showy men who work modestly for the common good in the obscurer regions of human life, and who, like the coralline plant, are always accessible to those who seek them at the low water-mark of life's affairs. C.

**Hypocrite, The.**—Would the hypocrite like to behold a creature something resembling himself? Let him look at the mantis. The insects of the tribe *Mantida* are principally inhabitants of hot climates, although a few species are common in the south of Europe. The *Mantidæ* move slowly along, and their whole attitude is so solemn that they are regarded with veneration by the inhabitants of all the countries in which they occur. In the south of Europe they are universally known by names indicative of the belief that their singular attitude is one of prayer. All this, however, is purely imaginary. The mantis is one of the most voracious of its class, and only assumes this solemn and devout appearance for the beguilement of its unsuspecting victim. Slowly and cautiously it steals along by almost imperceptible degrees until within striking distance of its prey, when one of the fore legs is instantly extended, and the struggling victim is soon mangled by the tremendous weapons of the destroyer. These insects are excessively pugnacious, and as is the case with sanctimonious hypocrites, two of them can scarcely come together without a combat. In the case of the mantis the termination of the quarrel is generally fatal to one if not to both of the combatants. Here the analogy unfortunately must end, for when hypocrites quarrel, their crafty selfishness teaches them how to survive. N. H.

**Idiosyncrasy Defies Coercion.**—There are persons even in America to whom a mutton-chop would be poisonous. Cases are known where animal food has been poisonous to people. Some persons cannot take coffee without vomiting; others are thrown into a general inflammation if they eat cherries or gooseberries. Many persons are unable to eat eggs, and cakes or puddings having eggs in their composition produce serious disturbances in such persons: if they are induced to eat them under false assurances of no eggs having been employed, they are soon undeceived by the unmistakable effects. Only gross ignorance of physiology, an ignorance unhappily too widely spread, can argue that because a certain article is wholesome to many it must necessarily be wholesome to all. Each individual organism is specially different from every other. However much it may resemble others, it necessarily in some points differs from them, and the amount of these differences is often considerable. If the same wave of air striking upon the tympanum of two different men will produce sounds to the one which to the other are inappreciable; if the same wave of light will affect the vision of one man as that of red color, while to the vision of another it is no color at all, how unreasonable is it to expect that the same substance will bear precisely the same relation to the alimentary system of one man as to that of another! Experience tells us that it is not so. PH.

**Ignorant Bigots.**—On entering the Gudarigby Caverns, near the Murrumbidgee River, New South Wales, you will see large numbers of the great-leaved horseshoe bat. If you proceed with torches they will become so eager to escape from your light that they will annoy you exceedingly by flapping against your face in their eagerness to escape into a congenial darkness. How much they remind one of those ignorant bigots who, when the torch of truth is carried into the recesses of superstition, dash in wild exasperation against the enlightener, and do their utmost to seek intellectual gloom! GA.

**Images, Accidental.**—A colored object being placed upon a black ground, if it is steadily looked at for some time, the eye

is soon tired, and the intensity of the color enfeebled; if now the eyes are directed toward a white sheet, or to the ceiling, an image will be seen of the same shape as the object, but of a complementary color; that is, such a one as united to that of the object would form white. For a green object the image will be red; if the object is yellow, the image will be violet. Accidental colors are of longer duration in proportion as the object has been more brilliantly illuminated and the object has been longer looked at. When a lighted candle has been looked at for some time, and the eyes are turned toward a dark part of the room, the appearance of the flame remains, but it gradually changes color; it is first yellow, then it passes through orange to red, from red through violet to greenish blue, which is gradually feebler until it disappears. If the eye which has been looking at the light be turned toward a white wall, the colors follow almost the opposite direction; there is first a dark picture on a white ground, which gradually changes into blue, is then successively green and yellow, and ultimately cannot be distinguished from a white ground. The reason of this phenomenon is doubtless to be sought in the fact that the subsequent action of light on the retina is not of equal duration for all colors, and that the decrease in the intensity of the subsequent action does not follow the same law for all colors. But the illusion is very startling; and it bears some analogy to the occasional remarkable creations of the memory when, in reproducing certain events and personages, it presents them in forms somewhat discernible, yet distorted; similar, yet totally different; true to life in outline, yet wholly erroneous in detail. Wonderful, under such circumstances, is the correspondence between the objective truth and the subjective reality. Yet the disparity is as tremendous as its existence is unsuspected, where the clearness of the mind's image is mistaken for its correctness.

EL.

**Imitation, The Habit of.**—Animals living in societies often copy or imitate the actions of an individual leader; and among insects this is particularly remarkable with the procession cat-



erpillars, which move more or less in processional order. The procession is always headed by a single caterpillar; sometimes the leader is followed by one or two in a single file, and sometimes by two or three abreast, and the whole train pursues its track through every turn and sinuosity without the slightest deviation. † Wild-fowl, in the various forms they assume in their flight, are led by one individual whose movements direct the flock. An entire flock of sheep following each other through a hedge will often jump when they reach a particular spot because their leaders jumped there, and they do so although the particular obstruction which first rendered the movement necessary has been actually removed. In like manner, we constantly see men following leaders, not because they have elected them to be their leader, but because of that strong principle of imitation which stirs them to follow. † So, too, we may observe that when one fanatic commences his crawlings over the tree of bigotry, there will always be a procession of fanatics ready to follow him in his peculiar courses. And when the mob has the example of one of the most audacious of its numbers, there is soon a goodly following. The working of the same principle is perhaps more observable in the world of fashion than anywhere else. A royal personage, as the result of illness, is obliged to walk with a limp. Forthwith fashionable ladies, the necessity for the limp being entirely absent, go about limping. Alexander the Great having a wryneck, it at once became the fashion in a nation of slaves. To-day any little dapper fellow, moving in privileged circles, can, in matters of fashion, rely on the following of a flock of the sheepsheads among us. P.

**Imitation as a Deceiver's Art.**—The natives of South Africa designate the puff-adder (*Vipera inflata*) the Noga-pout-sane or the goat's serpent, because it makes at night a bleating exactly resembling that animal. There were, says Livingstone, certainly no goats in the place where he happened to hear it. The natives suppose that by this bleating it hopes to deceive the traveler, and draw him within its reach. D.

**Imitation, Ludicrous Effects of.**—What ludicrous results

may be observed where men imitate with servility the doings of others ! The ambitious young preacher who is setting up as a genius copies the peculiarities in attitude and manner of the popular preacher near him, and causes actual merriment in the very matters in which he thinks he is most effective. Tom Snob, the rich soap-boiler, and his corpulent spouse, affect the airs, elegances, and foibles of the aristocracy, and either get themselves into serious difficulties by the attempt, or at least make a fortunate escape amid the derision of all beholders. These folks in their antics are very like those monkeys whose imitative power, Harris says, the Indians turn to destruction in this way : coming to their haunts with basins full of water or honey, they wash their faces in the sight of these animals, and then, substituting pots of thin glue instead of the water or honey, they retire out of sight. The monkeys, as soon as they are gone, come down and wash their faces likewise, and sticking their eyes together, become blind and are easily captured. In other places they brought boots into the woods, and putting them on and off, left them, well lined with glue or a sort of bird-lime ; so that when the unhappy monkeys put them on, they stuck fast, and hindered their escape. How many men have found it impossible to extricate themselves from corresponding difficulties into which they have been drawn through attempting to "swell" it off in the boots of the aristocracy !

P.

**Impermanence of Life's Forms, The.**—Life's forms are forever changing. Not only do individuals perish, but even types. Numberless creatures which once flourished on our earth are not even represented here now. The dodo will be seen no more ; the race has fled away. Among birds, the emu, the cassowary, and the apterix are species rapidly vanishing ; among quadrupeds, the kangaroo, the platypus ; others slowly, but not less surely. After a while, they will be gone from the earth wholly, as bears, wolves, mammoths, and hyenas have gone from the British Isles. The *Bos primigenus*, or great wild bull, was common in Germany when Julius Cæsar flour-

ished. The race has become wholly extinct, if, indeed, not incorporated with the large tame oxen of northern Europe. The beaver built his mud-huts along the Soane and the Rhone up to the last generations of man; and when Hannibal passed through Gaul on his way to Italy, beavers in Gaul were common. Thus have animals migrated or died out; passed away, the balance of life remaining.

S. N.

**Impertinence, The Model of.**—The sparrows are a tame, troublesome, and impertinent generation, and nestle just where you don't want them; they stop up your stoves and water-pipes with their rubbish, and build in the windows and under the beams of the roof, and would stuff your hat full of stubble in half a day if they found it hanging in a place to suit them. They are extremely pertinacious in asserting their right of possession, and have not the least reverence for any place or thing.

L.A.

**Impostor, The.**—If the opossum is surprised by the farmer *flagrante delicto* it lies down on the ground, counterfeits death, and takes any amount of beating without wincing; but as soon as the man, thinking that he has killed it, turns his back, the rogue decamps as fast as he can, and regains the forest. How like is this to the sleek sanctimonious impostor!

M.

**Impressions, Distinct and Faint.**—The organs of perception are like wax, and outward events are the seals which are stamping impressions. If the organs or faculties of perception, like wax overhardened with cold, will not receive the impressions of the seal from the usual impulse wont to imprint it, or, like wax of a temper too soft, will not hold it well when well imprinted, or else supposing the wax of a temper fit but the seal not applied with a sufficient force to make a clear impression—in any of these cases the print left by the seal will be obscure.

L.O.

**Impudence Balked by Stupidity.**—The jackal is most impudent; but its impudence would be more profitable were it not checked by stupidity. It sometimes happens that a jackal

steals silently into an outhouse to seize the poultry or devour the furniture, but hearing others in full cry at a distance, without thought it instantly answers the call, and thus betrays its own depredations. The peasants sally out upon it, and the impudent animal finds, too late, that something more than impudence is requisite to success. Many men and boys have had to learn the same lesson. If impudence could insure the triumph of their plans, all would be well with them; but it often happens that Nature, by way of counterpoise to their impudence, has weighed them with stupidity. Society is thereby protected from some of their rascality.

A.

**Incongruous Advantages.**—There is a peculiarity attending the constitution of the great water-beetle (*Dytiscus marginalis*) which marks it as a creature especially endowed for the station in which it is placed. Multitudes of insects exist in the larval state for a certain space of time in water; and having accomplished a given period in this state, perfecting their forms, they take wing, and become aerial creatures, after which a return to the element whence they sprang would be death to them. But this beetle, when it has passed from the larval state and obtained its wings, still lives in water, and never uses them except in the case of having to leave one pool for another. It would, therefore, on a superficial view appear to enjoy superfluous advantages which are incongruous with its position. In this it resembles a large number of persons in the middle and upper circles of human society. We see many of them raised from lower states and endowed with the wings of wealth, prestige, and honor, which should enable them to rise into the azure realms of benevolence and good taste; yet they never ascend to their possibilities. These advantages are superfluous and incongruous endowments, and in spite of them they remain in their old world of coarseness, sensuality, and selfishness. Libertine Jockey develops into an earl, yet his coronet cannot alter his tastes for the slums; Rhahab Wanton changes into a duchess, but her instincts direct her to the old ways and haunts.

J.

**Incongruous Combinations.**—Mr. Darwin found near Buenos Ayres a shallow lake of brine, which in summer is converted into a field of snow-white salt. The border of the lake, like others of the sort in Siberia, is a fetid black mud, in which are embedded large crystals of gypsum three inches long, and of sulphate of soda. "The mud in many places was thrown up by numbers of some kind of worm. How surprising is it that any creatures should be able to exist in brine, and that they should be crawling among crystals!" Truly this is an incongruous spectacle! Yet human society presents views which are equally incongruent. Men who are in goodness and intelligence the very "salt of the earth," are often hemmed in in their narrow grooves of action by that which is morally putrescent. A ring of loathsome law and customs has often surrounded and inclosed saints and martyrs. In the midst of society's basest pollution we often catch a ray of moral goodness, and discover that, like the crystal glittering in the black mud, there are some better elements than first appearances suggested. The presence of worms crawling among pure salt and beautiful crystals is not more unbecoming than the sight of rascals wearing coronets, rogues assuming the ermine, and tyrants wearing crowns.

N. V.

**Incongruous Situations.**—Neither animals nor men look well in incongruous situations. On the ground the sloths are about the most awkward and pitiable creatures that can well be imagined, for their fore legs are much longer than the hind ones; all the toes are terminated by very long curved claws; and the general structure of the animals is such as entirely to preclude the possibility of their walking on all fours in the manner of an ordinary quadruped. In this, which is an unnatural situation, they certainly appear the most helpless of animals, and their only means of progression consists in hooking their claws to some inequality in the ground, and thus dragging their bodies painfully along. But in their natural home, among the branches of trees, all these seeming disadvantages vanish. It is obvious, therefore, that when the sloth is not in the trees he is in an

incongruous situation.† And what a lesson his absurd position there should be to us not to make ourselves ridiculous by appearing on scenes where we can only exhibit our incapacity, and evoke either the pity or laughter of mankind! A man with an inapt, injudicial mind, presiding on the bench of justice and performing his functions under the inspiration of a bad heart and an uneven temper, is a spectacle whose incongruity equals that presented by the most clumsy sloth that ever ambled out of its element. Monstrously incongruous, too, is that other spectacle, of a man who has a jockey's tastes and bulldog's nature, stalking down to the gilded chamber occupied by the highest wisdom in England, for the purpose of displaying himself as an hereditary legislator ruling a free people. Poor awkward sloth! dragging yourself in unhandy fashion over the ground along which you were never intended to travel, you may be a sad illustration of a creature in an incongruous position, but you are not the most laughable one. These men dispute with you the prize for being the most ridiculous. N. H.

**Inconsiderable Creatures, The Strength of.**—The strength of some creatures, especially insects, considering the smallness of their size, is in several instances prodigious. The strength of the black ants is manifested by the quantity and magnitude of the materials which they collect for their heaps; but the common little red ant (*Formica rufa*), a much smaller creature, gives daily proofs of its abilities to remove heavy substances equal to any that we meet with. One of these little creatures, thirty-six of which only weigh a single grain, has been seen to bear away the great black fly as its prize, equal to a grain in weight, with considerable ease;† and even the wasp, which exceeds forty times its own weight, will be dragged away by the labor and perseverance of an individual emmet. Learn from these facts not to estimate the strength of things by mere reference to their material magnitude. One very little man like Pope may possess poetic power to shape a nation's literature. One hero, not six feet high, may create a kingdom or overturn it.

**Industry over Adversity, The Triumph of.**—Nothing is more absurd than to throw up the hands in wild despair, or to sit down in sullen despondency, when calamity overtakes us. The remedy for the evil is work—hard, earnest work. Let us “go to the ant; consider her ways, and be wise.” “When,” says Mr. Frederick Smith, “the habitations of the ants are by any means injured or destroyed, no time is lost in useless despair; one spirit animates each individual; simultaneously they set to work to repair their misfortune; unceasingly they labor; nothing damps their ardor or abates their industry, until, as if by a magic wand, their habitation again rises to its former height and beauty, and all trace of ruin has disappeared.” MU.

**Inexplicable Beauty.**—The crimson topaz (*Topaza pella*) is a bird of magnificent beauty, but curiously enough, although it is bedecked with resplendent hues which seem to need the presence of daylight, and to be made expressly for the purpose of reflecting the brightest beams of the sun, yet the lovely bird is one of the night wanderers, being seldom seen as long as the sun is above the horizon, and preferring to seek its food while the world is shrouded in darkness. The sea-mouse, too, whose iridescent garment possesses all the tints of the rainbow, is also a darkness-lover, and passes its life sunk in the black mud of the sea-shore. Here, therefore, we have two instances of inexplicable beauty. “Beauty which is not explicable is,” says a great thinker, “dearer than a beauty which we can see the end of.” Certainly in Nature we never see the end of it. It is ever coming upon us as a new surprise. It is an eternal symbol.

H.

**Inexplicable Services.**—The most singular species of all the white ants is that of the parasol ants of Trinidad in the West Indies, which walk in long procession, each carrying a cut leaf over its head, as a parasol in the sun, and these they deposit in holes ten or twelve feet under ground, apparently with no other object than to form a comfortable nest for a species of white snake which is invariably found coiled up among them or digging out the deposit. What regard they can have for

this snake, or why they should render him any service, is quite a mystery. ~~As~~ also are the acts of men who have bequeathed vast wealth to rich people whom they have never seen and who never did them any good. Such proceedings rank among the inexplicable services of the world. I. L.

**Infernal, Earth's Hints of the.**—Beauty, says Akenside, was sent from heaven, the loving mistress of truth and good to this dark world. And beauty gives us many a splendid picture in every clime and on every shore, which suggests a glory yet to come, a paradise elsewhere. But there are in Nature many scenes over which beauty does not preside—views which are overshadowed by appalling forms, colored with awful hues, and portraying the huge, the poisonous, the hideous, moving in horrible and stupendous combination around abyssmal depths, or on plains vast and terrible in their gloomy grandeur. Look where the densely leaved cypress of the New World grows in company on the plains of California, Louisiana, and Virginia, forming extensive forests. There with the tree of some thousand years—in some instances the age has been computed at four thousand—the grandeur becomes a demoniac power. As yet, says Dr. Herman Massius, no ax has thinned these aboriginal wildernesses, no skill drained these moors abounding in terrors, and which have been denounced under the name of cypress swamps, described by Sealsfield with such terrible and lively coloring. Gigantic trunks, more than three hundred feet in height and of unheard of strength, crowd close together, entwining their branches, and spreading even over the brightest day the obscurity of night; so that the foot which penetrates hither can only venture its timid step by the gleam of torches. Blocks of stone and half-rotten trunks of trees, piled up in wild confusion, rise from out the bottomless mire. Here alligators, serpents, and the biting tortoise lie in ambush, the sole lords of this frightful pool, reeking under the burning heat of an almost tropical sun. Such is the aspect of things in summer; while in spring the thick and muddy waters of overflowing rivers pour tumultuously for miles over this ungenial vege-



tation. With our eye upon a scene like this, may we not say that, though the world possesses many emblems of paradise, it also has some which are, at least, hints of the infernal? ST.

**Influence Lost in Form but not in Force.**—The Amazon, the River Plata, Orinoco, Mississippi, Zaire, Senegal, Indus, Ganges, Yangtsee, or Irrawaddy, etc., etc.—these, and such like stupendous rivers, extend their influence to a considerable distance from the coast, and occasionally perplex and delay the navigator in open sea, who finds himself struggling against a difficulty, wholly unconscious of the cause. The River Plata, at a distance of six hundred miles from the mouth of the river, was found to maintain a rate of a mile an hour; and the Amazon, at three hundred miles from the entrance, was found running nearly three miles per hour, its original direction being but little altered and its water nearly fresh. We are reminded by this of other influences which also lose their form but not their force. Though the man dies, his influence still lives. He no longer acts upon the world in the capacity of public speaker, writer, or statesman, but his influence has gone forth and joined the great ocean of thought. The sect or party changes its form and loses its individuality, but its influence has gone forth and is felt in the current of opinion. All the separate and distinct influences of men and sects become universalized in the great sea of eternity. MA.

**Injured but not Destroyed.**—Though your attempt to destroy a man's position may fail to accomplish that object, it may be productive of serious injury to him. Yet, fortunately for him, that very injury may afterward bring forth good results. His friends may rally round him; his resources may be added to through the medium of the sympathetic; or he may be so acted on as to put forth power from within which develops new graces and fresh vigor. You injure a tree, and you will discover reparation is at work even there. The wheel of your cart, for instance, grazes the trunk, or the root of the tree is wounded by your passing plowshare; the result is, an adventitious bud comes. Wherever you see those adventitious buds which come without

any order, you may recollect that their formation is frequently thus produced, by the irritation caused by injury. # You cut down the heads of a group of forest-trees; you have not destroyed them. Like the men you have injured, they live to tell the tale. The pollarded dwarf remains to declare what the forest-tree would have become but for you. Even the date of your attack can be ascertained; for the stunted group will cover themselves with branches all of the same age and strength, which will exhibit to the sky the evidence of the story: injured these all are; yes, but not destroyed. v.

**Injured, The Persecution of the.**—It is a strange fact that both animals and men enter heartily into the persecution of the injured. The motive which induces animals to attack and even destroy the wounded and disabled of their own species arises from an impulse which certainly is not easily defined; but it is clear the deed is perpetrated, and that under feelings of the most intense hatred. When a wolf or hyena is wounded, its companions instantly tear it to pieces and devour it; and among domestic dogs, the persecuted, defenseless cur, yelping in its flight from the brutality of the idle urchins in the streets, is chased and worried by every dog within hearing of its distress. There exists an instinctive repugnance to everything which cannot defend itself. # The motive which permits men to attack or neglect those who are disabled is also impenetrable. But the sad spectacle is sometimes seen; and the man who is in search of protection from a horde of persecutors goes from one man to another for aid only to be snapped at, cuffed, brow-beaten, and snubbed. P.

**Injured, The Recuperative Powers of the.**—Like many other beings that occupy a very low position in the animal kingdom, the starfishes have a very great power of reproducing lost or damaged members. It is a common thing to find specimens of this very species with only three rays, and sometimes a five-finger starfish (*Uraster rubens*) is found with only one ray complete. Now the fisherman, either ignorant of their reproductive powers, or failing to draw a just inference from his knowledge,

has a custom of tearing the starfish in two, and throwing the pieces back into the sea. The consequence is, that the two halves become two individuals, and the fisherman has only doubled the power of his foe instead of destroying it. #From these facts persecutors might learn a very useful lesson. The creatures they wantonly injure have a recuperative power which is not taken into adequate consideration. All history will attest this fact. When inquisitorial and brutal "fishers for men" have been sent forward by despots, who have desired to break up religious sects and destroy political parties, it has never been properly understood that the very means for extermination which have been adopted have been the very ones which would multiply the power of those whom these scoundrels intended to injure. Tyrants may exert their utmost force against their humble enemies, and find, too late, that they have multiplied in consequence of it. The recuperative power has come into work, and multiplication has joined it.

F.

**Injurers, Unconscious.**—The little boring wood-beetle attacks books, and will even bore through several volumes. An instance is mentioned of twenty-seven folio volumes being perforated in a straight line by one and the same insect, in such a manner that by passing a cord through the perfect round hole made by it the twenty-seven volumes could be raised at once. It also destroys prints and drawings, whether framed or kept in a portfolio. These poor insects have no conception of the value of the things they may destroy. Any common trash of closely packed paper would suit them just as well; but in their ignorance they are destroyers of that which is of value to the world. They have their imitators among humanity. There are dull men in societies who nibble away in their petty line of action until the program of the entire institution is defaced. There are others in churches and chapels, who, boasting that they "will go straight," bore their petty lines of attack even through the most beautiful of spiritual designs. There are women in households whose narrow spirit blemishes the entire glory of home. All of these creatures belong to the class of beings who

in asserting their own rights destroy that which is valuable without even knowing that they are so doing. I. O.

**Injuries, The Propagation of Posthumous.**—The alligator lays her eggs in some secluded place in the sand, on the banks of a river; or else in some places, such as the neighborhood of Cayenne and Surinam, she buries them under a kind of mound raised by the collection of damp leaves and herbaceous stems. She departs altogether, and then, without any further assistance from her, the eggs get hatched; in the first case by the solar rays, and in the other by fermentation and the increase of temperature. It does not matter if the parent dies. The infant alligator is sure to be hatched. In the archives of solicitors' offices we have found that the mind of man often propagates its ideas upon a similar general principle. They look harmless, are wrapped up in inoffensive form, and put out of sight for a time. But, as in the case of a will, the day comes when the little ideas have to see the light, and they soon come forth panoplied in all the strength of their base progenitor. They live and work their mischief for generations, and again propagate themselves as curses to families whom the parent alligator mind had never seen. Like the reptile, the mind of man possesses the capacity for propagating posthumous injuries upon the world. RE.

**Innovation without Destruction.**—You say you hate innovation, are afraid of it; it is destructive. Ask your gardener to explain how he effects an innovation with which you are always pleased but never are afraid of. He will show you a trunk of a tree cut through horizontally, with a vertical cleft made in its center some inches deep. Into this cleft the branch of a graft with several buds, and cut to the shape of the cleft, is inserted, which is closely in contact with the sides of the cleft. The cleft is then covered with mortar of some kind, and bound firmly together by means of cord. He will tell you that cleft-grafting is operated successfully both on the trunks and roots of your trees. Horticulture has instructed him how, by this means, to change with advantage the products of trees of the

same species, making the head bear fruit and flowers other than those belonging to the principal stem. In fact he restores the vigor and sweetness of youth to a tree already aged and exhausted. Is not this operation innovation without destruction? Nay, more, is it not innovation effecting actual improvement? Now in society there are many old institutions like that trunk of a tree of yours and those stumpy roots. They have flourished out their day, are now nearly effete. But they have just enough vitality to supply to a new principle all that that new principle requires in order to make it grow in men's esteem and bud and blossom like the rose. You do not want the old institution removed: you do not merely desire it to cumber the ground in its present melancholy barrenness to tell the tale of better days. The perpetuation in inelegance and uselessness of the worn-out forms of once beautiful growths cannot be a very sacred duty when it is obvious that by a little proper management, and a judicious grafting of new life upon them, they may be made to flourish with new glory and produce new blessings for a thousand years to come. Learn a lesson from the garden, and let the sweet odor of your grafted roses and varied flowers and blossoms waft to your appreciative soul softened and refined feelings concerning the ugly word "innovation." v.

**Inquisitiveness Punished.**—How actively inquisitive are some people; and into what strange predicaments does this their strong propensity land them! They remind us of the crested anolis (*Xiphosaurus velifer*), a species of the lizard tribe. It is a timid yet restlessly inquisitive animal; for although it hides itself with instinctive caution on hearing the approach of a foot-step, it is of so curious a nature that it must needs poke its head out of its hiding-place, and so betray itself in spite of its timidity. So absorbed, indeed, is the anolis in gratifying its curiosity, that it will allow itself to be captured in a noose, and often falls a victim to the rude and inartificial snares made by children.

IL.

**Insensibility Mistaken for Safety.**—The "oyster-catcher" birds, if pursued, hide their heads in the first hole they come

to, as if thinking, like the ostrich, that if they cannot see you, you cannot see them. †

HI.

**Insignificant, The Mightiness of the.**—The *débris* of the *Infusoria*, which may be called the world-makers, are discovered in prodigious quantities among the remains of the primitive creation. The name *Infusoria* has been given to them because they were first observed in liquids holding in dissolution or in infusion putrescible matter. The accumulated spoil of these infinitely small organisms constitutes a notable part of the solid crust of our globe; and we ourselves are eye-witnesses of the phenomena of continual reproduction and destruction by which they made ready, at the epoch of the ancient geological formations, the habitation of man. According to Ehrenberg, a cubic inch of the Tripoli sand, which is still in course of formation in the environs of Bilin, in Bohemia, contains eleven millions of the shells of the infusorias which produce this friable substance. The same naturalist states that, so great is their power of reproduction, one million of these animalcules are born in ten days of a solitary individual. Bearing these facts in mind, it is not difficult to understand what immense masses of matter must have been deposited by the innumerable generations which have succeeded one another during the long periods of the primitive epochs, and which have covered with accumulated strata, mingled with sedimentary earths, the rocks of igneous origin that formed the first crust of the earth. † The fossil *débris* of such shells as ammonites, nautili, and nummulites, are also found in vast masses, which sufficiently indicate the infinite multiplication of life in the dense warm waters of the primeval seas. The illustrious geologist, Dr. Buckland, affirms that the nummulites form a considerable portion of the entire mass of several mountains; as, for instance, the tertiary calcareous deposits of Verona and Monte Bolca, and the secondary stratified earths in the cretaceous formations of the Alps, the Carpathians, and the Pyrenees. The famous colossal Sphinx, and the hugest of the Egyptian pyramids—that which is generally distinguished by the name of Cheops—are constructed of a limestone wholly

composed of these *Foraminifera*, which are everywhere widely distributed, and which, by their countless legions, seem to have sought a compensation for their extreme diminutiveness. "The sand of the sea-shore," says Dr. Chenu, "is so filled with *Foraminifera* that one may justly say it is half composed of them. In an ounce of sand in the West Indies were nearly four millions of individuals. The banks formed by these beings impede navigation and render it dangerous, obstruct the gulfs, fill up the harbors, and in conjunction with the madrepores construct those islands which from time to time emerge in the warm regions of the great ocean; and this rôle, actually played out to-day by living species, was formerly filled by those which are now found only in a fossil condition. At the epoch of the coal-measures (or carboniferous formation), a single species of *Fusulina* built up in Russia enormous beds of limestone. The cretaceous deposits reveal an immense quantity in the white chalk that extends from Champagne into England. Finally, in the tertiary formations of numerous localities, and especially in the environs of Paris, the limestone grit incloses an infinite number; and it has been calculated that a cubic yard of this stone, excavated from the quarries of Gentilly, contained more than three millions of individuals. Paris, as well as many neighboring towns and villages, is almost wholly built with these *Foraminifera*. Thus, then, animals hardly perceptible to the unassisted eye change to-day the depth of the waters, and have, at various geological epochs, filled basins of a considerable area. This fact shows us that each animal has its allotted task, and that with time—time of which Nature takes no count—the animals which appear to us so contemptible on account of their smallness might change the aspect of the globe." *Œ* MV.

**Instinct.**—The operations of instinct are unvarying. The ant and the hen act now as they acted in the days of King Solomon, and are incapable of altering their course of action. "What can we call the principle," asks Addison, "which directs every kind of bird to observe a particular plan in the structure of its nest, and directs all the same species to work after the

same model ? It cannot be imitation ; for though you hatch a crow under a hen, and never let it see any of the works of its own kind, the nest it makes shall be the same to the laying of a stick with all the other nests of the same species. It cannot be reason ; for were animals endowed with it to as great a degree as man, then buildings would be as different as ours according to the different conveniences that they would propose to themselves." The young crocodile or alligator, on issuing from the egg, is drawn toward the nearest water. It will even proceed in a direct line for the stream, just as if it had been there many times before, and was perfectly acquainted with the ground. So it is with the young of turtles. The turtle, though a marine animal, goes on shore to lay her eggs and make a nest for them in the sand. Yet no sooner do the little turtles come forth from their shells, and peep over the surface of the sand, than they commence a direct line of march toward the sea, making no stop till they reach the water's edge ; and it is observed, says Humboldt, that though they may have burst the shell of the egg during the day, they are never known to come forth from the nest but at night ; so that they are not assisted by daylight to find their way to the deep. Experiments have been made on the young, says the same writer, by putting them into a bag, carrying them to some distance from the shore, and then letting them out with the tail turned toward the water, but it is always found that they turn about, and take without hesitation the shortest way to the beach, apparently discriminating on which side the air is most humid. R.

**Instinct and Somnambulism.**—Working-bees, says Cuvier, have since the beginning of the world constructed the most ingenious edifices, agreeable to principles of the highest geometry, and destined to lodge and nourish a posterity which is not even their own. Solitary bees and wasps also form very complicated nests for their eggs. From the egg there springs a worm, which has never seen its mother, which does not know the structure of the prison in which it is inclosed ; but when once it is changed into a wasp or bee it constructs a similar nest, equally perfect,



for its own egg. We cannot form a clear idea of instinct but by admitting that the animals endowed with it have, in the sensorium, continued *innate* sensations and images, which determine them to act like sensations received through the organs of sense. Instinct is a kind of dream or vision that perpetually haunts them and prompts them to action; and in everything that respects their instinctive notions we may regard animals *as a kind of somnambulists*. s.

**Instinct, The Prognosticating.**—Great are the advantages which are possessed by that man who is blessed with the prognosticating instinct; for thereby he is enabled to observe the signs of the times, prepare prudently for the things which are looming in the future, and to be ready to perform his part discreetly, when the man who is not similarly endowed is in all the tumult of surprise and confusion. But this instinct is not confined to man; it has a far wider range. And the individual who has not yet seen the advantages of being ready in season and out of season will do well to investigate this matter. He will be surprised at the state of constant preparedness in which even creatures far inferior to himself are to be found. The actiniæ throw out their feelers and expand themselves when a continuance of fine weather is to be expected, but withdraw and contract themselves, even in a room, when a change is impending. (The mussels, before the approach of a storm, spin several new threads to secure their hold on the rocks; and leeches rise to the surface of the water before rain. Spiders enlarge their webs during fine weather, but spin only short threads, work seldom, or hide themselves in corners during rain. Many beetles, by their active flight and humming sounds, give tokens of the morrow's brightness. Before rain, bees remain either in their hives or in the neighborhood of them; and ants convey deep into the hills the pupæ which they expose to the sun in fine weather. If the atmosphere be lowering in the morning, pigeons feed rapidly, and return to their cots, and the hare hides itself; but the mole comes to the surface of the ground, and the squirrel seeks its nest and shuts its entrance. D.

**Instinct Unsubmissive to Argument.**—You may make your position logically perfect, and your hearer may admit it to be so; but it does not follow that either of your minds is so influenced thereby that your feeling in regard to the subject-matter will be changed. Take the case of our aversion to reptiles. Strange, grotesque, and oftentimes most repulsive in appearance, though sometimes adorned with the brightest tints, the reptiles excite an instinctive repugnance in the human breast; and whether it be a lizard, a snake, or a tortoise, contact of one of these beings will cause even the most habituated to recoil from its cold touch. Now you may argue that many of these reptiles are quite harmless, and some of them handsome, and that, therefore, our repugnance cannot be entertained. But the fact remains, that when all argument has ceased there is a universal disgust and even horror cherished by men in regard to reptiles. Their instinctive dislike is unconquered by reasoning. IL.

**Instinct, Errors of.**—With respect to instinct, it is important to observe that animals not infrequently make very curious mistakes. For instance, flies have the instinct of depositing their ova in places where they shall have plenty of food when they arrive at the maggot state, and hence they generally deposit them on flesh, particularly if it happens to be somewhat tainted. Now there are certain species of flowers (as, for example, the *Rafflesia Arnoldi*, which is a native of Sumatra, and grows to an enormous size) which have a smell of carrion; on these the flies, deceived by their instinct, deposit their eggs, which, when they become maggots, perish from want of food. The same thing occurs in the case of the *Musca vomitoria* with respect to various species of *Phalli* and *Agarici*, which possess much of the odor of dead flesh, leading to similar mistakes.

S.

**Instinct, The Errors of the Maternal.**—Ducks' eggs are often put under a hen to be hatched. When seeking her food, the hen sometimes leads her little flock to the edge of the water, and gives them a glimpse of its dangers. But the ducklings, impelled by instinct, rush into the element they are most par-

tial to. The poor mother, anxious for the fate of the young giddy-pates, which she loves as her own offspring, utters cries of terror. She would resolutely throw herself into the stream and perhaps get drowned were she not soothed by seeing them swimming about happy and active. In the present age when domestic chivalry often runs mad, we are accustomed to hear the maternal instinct represented as divinely right. Here is an instance which points in a contrary direction. The hen hatches eggs in mistake which do not belong to her own order; and when her ducks desire to act as ducks ought to act, she would fain prevent them. Her foolish solicitude is in fact eager to denaturalize them. She is a good illustration of the simpering mothers who preside over the destinies of some men's children. The chief energies of such women are directed to check the enterprise of the little ones, to conventionalize them, and to render them chicken-hearted.

RE.

**Instinct at Fault, The Maternal.**—The maternal instinct does not always bring forth the fruits of love, and practise the deeds of self-sacrifice and tender care. In its perverted form it abandons the helpless one who looks to it for protection. The instances of such perversion are not rare. Father Ripa, writing about this subject in China, says that in that vast empire there is nothing unusual in the spectacle of children abandoned by their mothers. Indeed it occurs daily. When mothers are poor and have large families, or observe any defect upon the body of an infant, or any indication of an illness likely to become troublesome or expensive, they cast away the little creature without remorse. This cruel custom is also practised by unmarried women who have children, and especially even by the members of a sect called Necoo, who pretend to live in spotless chastity. The poor infants are secretly thrown into a river, or left near the public road, even though it is well known that in most cases they will be devoured by wild beasts.

**Instincts, Opposing.**—Two instincts having different objects sometimes become opposed to each other, and under these circumstances the stronger always prevails. This is not uncom-

mon among swallows, which have been frequently observed to build their nests at a late period of the season, and near the time when they make their usual migrations from this country. Here the young ones are hatched too late, and the instinct to migrate being stronger than that which prompts them to cherish their young, the latter are forsaken, and perish for want of food. s.

**Instincts in Unexpected Forms, Social.**—Social instincts, and even noble traits, are not confined to mankind. We find them in strange places and in unexpected forms. Look at the walruses, for instance; the social instincts with them are most powerful, and they fight for one another with a courage and an obstinacy that their strength and formidable weapons render frequently fatal to the hunters. Frequently the walruses lie in great numbers along the banks of the ice, motionless, and piled pell-mell one upon another. But one of them, during their repose, enacts the part of sentinel. At the slightest appearance of danger it precipitates itself into the water. All the others immediately attempt to follow; but in this critical moment the slowness of their movements sometimes produces the most grotesque scenes. In the confused state in which they have been lying, it is with difficulty they disengage themselves from the masses of heavy flesh which inclose them on every side. Some roll awkwardly into the water; others crawl painfully along the ice. The weight of their body and the enormous disproportion of their limbs render all movements upon the ice extremely difficult for them. But as soon as these ungainly animals are in the water, they resume all their vigor, and, if attacked, defend themselves with astonishing courage. At times they themselves begin the fight; they dart upon the fishermen's boats, seizing the gunwales with their long hooklike teeth, and draw them furiously toward them. At times they glide under the skiff, and endeavor to capsize it. Their hardy, scaly skin resists the blows of pike and spear, and it is neither without difficulty nor danger that the poor fishermen escape from such formidable adversaries. In these desperate combats the walruses are gen-

erally led by a chief, who is easily recognized by his great size and impetuous ardor. If the fishermen succeed in killing him, at that instant all his comrades abandon the struggle, gather around him, support him, by means of their teeth, on the surface of the water, and drag him in all haste far from the attacking boats, and out of peril. But the most impressive and dramatic scene is when the walruses fight to secure their young. Generally they attempt to deposit them on a bank of ice, in order that they may fight more freely. If they have not sufficient time to place them in safety, they take them under their paws, clasp them to their breast, and throw themselves with desperate audacity against the fishermen and against their boats. The young walruses exhibit a similar devotion and a similar intrepidity when their parents are in peril. They have been known, when placed apart in security, boldly to quit the asylum chosen for them by anxious affection, and take their share in the struggle in which the mother was engaged, to sustain her efforts and participate in her dangers. It is not uncommon for us to boast that the family solicitude and regard for each other's interests which we frequently see in American homesteads are the result of our civilization. No doubt civilization refines and elevates whatever it touches, but it is certainly entitled to very little credit in this matter. The care which the individuals of certain species take of one another is a simple instinct of their nature, for which they are no more entitled to credit than they are for eating when they are hungry or sleeping when they are sleepy. A parent walrus cannot be supposed to think of merit when she protects her young, any more than the young walrus thinks of merit when defending its parents. But how often, when services are performed by human parents for their children, or by children for their parents, it is considered on all sides that something quite meritorious has been accomplished! Let us rather say, on such occasions, that instinct has asserted her beautiful and simple sway. Nor would it be out of place to remind those parents and children who refuse to render to each other the services which Nature has imposed upon them,

that the walrus has a lesson for them. Let them in utter abasement turn from their worldly moralities, logical quibbles, and human selfishness, and gaze toward the Northern seas on those heroic tragedies of the parents and children of a species stirred and directed by the impulses of Nature only. MY.

**Insusceptible Character, The.**—Amid the tribes of insects, so particularly influenced by seasons, there are a few which appear little affected by common events. The brown meadow-butterfly (*Papilio janira*), so well known to every one, is never missed in any year; and in those damp and cheerless summers, when even the white cabbage-butterfly is scarcely to be found, this creature may be seen in every transient gleam, drying its wings and tripping from flower to flower with animation and life, nearly the sole possessor of the field and its sweets. It is a happy emblem of the insusceptible man, who, whatever may be the sorrows and agitations of the period, is never dejected or depressed. Although the gloom of death and wretchedness may be all around him, and many of his fellow-creatures may be unable to face the pitiless circumstances of the day, he is jaunty and jolly, vivacious and able to enjoy his usual delights and avocations. Nature fortunately gave him the brown-butterfly temperament. J.

**Interchange, The Principle of.**—Nature is against exclusiveness. It is part of her plan that there shall be everywhere mutual giving and taking. You may observe this even in the tides. The tidal currents are perpetually shifting and redistributing the deposits along the sea-bottom; the Gulf Stream is as regularly transporting tropical products to temperate regions; and the Polar currents carry with them icebergs and ice-floes laden with rocks and gravel, which are dropped on the sea-bottom as the ice melts away in warmer latitudes. Reciprocity is everywhere. AD.

**Interdicted Political Convictions.**—M. Fournet, in his description of the metalliferous gneiss near Clermont, in Auvergne, states that all the minute fissures of the rock are quite saturated with free carbonic-acid gas, which gas rises plentifully from the

soil there and in many parts of the surrounding country. The various elements of the gneiss, with the exception of the quartz, are all softened, and new combinations of the acid with lime, iron, and manganese are continually in progress. Another illustration of the power of subterranean gases is afforded by the Stufas of St. Calogero, situated in the largest of the Lipari Islands. Here, according to the description published by Hoffmann, horizontal strata of tuff, extending for four miles along the coast, and forming cliffs more than two hundred feet high, have been discolored in various places, and strangely altered by the "all-penetrating vapors." Dark clays have become yellow or often snow-white, or have assumed a checkered or brecciated appearance, being crossed with ferruginous red stripes. In some places the fumeroles have been found by analysis to consist partly of sublimations of oxide of iron; but it also appears that veins of chalcedony and opal, and others of fibrous gypsum, have resulted from these volcanic exhalations. M. Virlet gives an account of the corrosion of hard, flinty, and jaspideous rocks near Corinth by the prolonged agency of subterranean gases, and Dr. Daubeny describes the decomposition of trachytic rocks in the Solfatara near Naples, by sulphureted-hydrogen and muriatic-acid gases. Although in all these instances we can only study the phenomena as exhibited at the surface, it is clear that the gaseous fluids must have made their way through the whole thickness of porous or fissured rocks which intervene between the subterranean reservoirs of gas and the external air. The extent, therefore, of the earth's crust which the vapors have permeated and are now permeating may be thousands of fathoms in thickness, and their heating and modifying influence may be spread throughout the whole of this solid mass. We learn from Professor Bischoff that the steam of a hot spring at Aix-la-Chapelle, although its temperature is only from  $133^{\circ}$  to  $167^{\circ}$  F., has converted the surface of some blocks of black marble into a doughy mass. He conceives, therefore, that steam in the bowels of the earth, having a temperature equal to or even greater than the melting-point of lava, and having an elasticity of which

even Papin's digester can give but a faint idea, may convert rocks into liquid matter. These wonderful facts might suggest useful thoughts to the despots of the world. Despotism interdicts the expression of political convictions, and seeks to bury them under the adamantean weight of oppressive decrees and colossal cruelty. But it is an unerring moral law that the warm aspirations of a virtuous people shall—like the subtle subterranean gases—arise to freedom, and, despite all impediments, dissolve in due time even the hard and hoary foundations of injustice.

E.

**Invaders, The Callousness of Thievish.**—The death's-head moth (*Acherontia atropos*) is a thievish invader. It makes its way into beehives in order to steal the honey, of which it is excessively fond. Like other thievish invaders, it is utterly callous. It is to no purpose that the bees dart their stings at the intruder; they only blunt them against its thick skin, and soon, terrified at its presence, disperse on all sides. We are too apt to applaud military invaders when they are successful in enriching themselves. We award them glory for their brave incursions into other people's territory. Possibly in many cases it will be discovered that the defensive army was, like the bees, unequal to a vigorous resistance; and that what was called the bravery of the invaders was nothing more than the exhibition of that natural callousness with which, like the death's-head moth, many thievish invaders are endowed. Nature has made creatures which do not feel even a just sting. The death's-head moth is impervious to the righteous punishment of the bee. Thievish invaders are inaccessible to the stings of conscience.

1.

**Invariable, Nothing.**—There is no body or part of a body whose existence can be termed invariable. Wherever in the material world anything seems to be unchanged, whether it is in reference to its situation or its internal condition, this inaction is only apparent, as the hour-hands of a clock appear to be stationary when we take a cursory glance at them. This is,



however, but a feeble simile when we speak of changes which are hardly perceptible in the course of many thousand years.

SO.

**Invisible may yet be Legible, The.**—When, a generation since, the remnant of English troops left after the then disasters at Cabul were shut up in a fort, surrounded and vigilantly watched by their enemies, they managed nevertheless to send brief letters to their nearest friends. These letters to appearance were only blank pieces of paper. But they were covered with words traced with rice-water instead of ink, every word becoming visible and bright blue when the paper was washed over with iodine! This wonderful substance, iodine, has the property of rendering starch blue or violet color; and as rice contains a considerable quantity of starch, an invisible ink prepared from it assumes that hue when touched with iodine, though previously quite colorless.

TH.

**Irascibility, The Perils of.**—Some men are so irascible that they will quarrel at the slightest thing. They are like the larvæ of the *Megacephala* (a group allied to the tiger-beetles), which are described as being so rapacious and irritable that they seize at anything that disturbs them. In this way they are easily taken by inserting a straw in their burrows, which they instantly seize with their mandibles and pertinaciously retain. In this, their easy capture, they remind us of the ready way in which the irascible men already referred to are ensnared by those who, knowing their propensities, are able, by the necessary provocation, to obtain facile conquests over them. Such are the perils of irascibility.

MU.

**Irritable Temper, Shocks of.**—Electric fish are those fish which have the remarkable property of giving, when touched, shocks like those of the Leyden jar. Of these fish there are several species, the best known of which are the torpedo, the gymnotus, and the silurus. The torpedo, which is very common in the Mediterranean, has been carefully studied by MM. Becquerel and Breschet, in France, and by M. Matteucci, in

Italy. The gymnotus has been investigated by Humboldt and Bonpland in South America, and in England by Faraday, who had the opportunity of examining live specimens. The shock that they give serves both as a means of offense and of defense. It is purely voluntary, and becomes gradually weakened as it is repeated and as these animals lose their vitality, for the electrical action soon exhausts them materially. Among the "odd fish" of human society are the constitutionally irritable ones. There are several varieties of them, but they all resemble each other in that they are perpetually giving off shocks of irritable temper, not only as a means of defense, but, and very especially, as a means of offense. The force of the shocks gets weakened, because those who have to bear them get used to the sensation. Shocks of temper which are terrible at first become trivial by repetition. But the irritable human being, especially if a female, is unlike the electric fish in regard to the exhaustion following the shocks. While the fish certainly suffers in that way, it is obvious that the human specimen does not. The fish lose their vitality by giving off shocks, but irritable human beings become exhilarated and happy when they can exercise their functions in that direction.

EL.

**Jealousy, The Follies of.**—The stag of the red deer (*Cervus elaphus*) in the early part of September becomes exceedingly jealous. If a rival happens to approach his seraglio a combat à outrance immediately takes place. The two adversaries rush impetuously one against the other; on their feet and knees they fight; long and obstinate are such battles; wounds are given and received, and blows are parried with consummate skill. Sometimes their antlers get entangled to that extent that they are unable to separate. Fastened together, the two heroes strive in vain to disentangle themselves, and some of these hostile couples thus closely riveted together ultimately perish of famine. Such are the follies of jealousy among stags. Among men they are far more grotesque, as may be seen by a reference to coroners' inquests, law reports, or often by even a glance at an ordinary newspaper.

M.

**Joint-Stock Company, A.**—The idea of a joint-stock company was probably first borrowed from the fox. The ways by which rogues associate themselves together to plunder honest folk, the strongest keeping in the background, and the weakest being put forward, very much remind one of the account given by Dr. Henderson, in his "Journal of a Residence in Iceland," of the manner in which the Arctic foxes, which abound in the vicinity of the North Cape, hunt various species of wild-fowl. "They proceed," he says, "on their predatory expeditions in company; and previous to the commencement of their operations they hold a kind of mock fight upon the rocks in order to determine their relative strength. When this has been fairly ascertained they advance to the brink of the precipice, and taking each other by the tail, the weakest descends first, while the strongest, forming the last in the row, suspends the whole number till the foremost has reached their prey." Then they determine upon a "voluntary winding up." A signal is now given, on which the uppermost fox pulls with all his might, and the rest assist him as well as they can with their feet against the rocks. In this way they make off and proceed from rock to rock, until they have provided themselves with a sufficient supply, like a number of cunning promoters of companies pouncing down upon the public from the altitudes of magnificent schemes and vast professions.

R.

**Judgment, Comparison and.**—The estimation of distance and of size of objects depends on numerous circumstances; these are, the visual angle, the optic angle, the comparison with objects whose size is familiar to us, the diminution of the precision of the image by the interposition of a more or less vaporous medium. When the size of an object is known, as the figure of a man, the height of a tree or of a house, the distance is estimated by the aperture of the visual angle under which it is seen. If its size is unknown, it is judged relatively to that of objects which surround it. A colonnade, an avenue of trees, the gas-lights on the sides of a road, appear to diminish in size in proportion as their distance increases, because the visual

angle increases; but the habit of seeing the columns, trees, etc., in their proper height leads our judgment to rectify the impression produced by vision. Similarly, although very distant mountains are seen under a very small angle, and occupy but a small space in the field of view, our familiarity with the effects of aerial perspective enables us to form a correct idea of their real magnitude. The optic angle is also an essential element in appreciating distance. This angle increasing or diminishing according as objects approach or recede, we move our eyes so as to make their optic axes converge toward the object which we are looking at, and thus obtain an idea of its distance. Nevertheless it is only by long custom that we can establish a relation between our distance from the objects and the corresponding motions of the eyes. It is a curious fact that persons born blind, and whose sight has been restored by the operation for cataract, imagine at first that all objects are at the same distance.

EL.

**Kindness Natural and Remunerative.**—Kind Heaven has created the universe on the principle of kindness. Accordingly nothing which violates its law can in the end be advantageous, while conformity to the law is ever attended with every possible advantage. Take an illustration from the horticulturist. We well know that buds are placed upon the stem of the tree at regulated intervals, where they develop themselves in the form of branches, and extend the tree, nourishment being carried through them to every leaf and fiber. It is also one of their peculiarities that, without injury to these organs, they may be separated from the parent plant and placed upon another, which, so to speak, says Louis Figuier, becomes its nurse. Horticulturists profit by these circumstances to produce some of their finest flowers and fruits. This process, known to gardeners as budding or grafting, is practised in many different ways, but in all the principle is the same. The bud, without any of the wood, is carefully removed from the parent tree, and applied to a corresponding cut in the nursing one, covering the wound so as to keep out the air. The bud continues to grow on its

new nurse, and in course of time it forms a branch or head of a tree producing the same flowers and fruit for which the parent may have been celebrated. The principle is applied most successfully in horticulture where some delicate species of fruit or flowers is produced on a stem destitute of the vigor necessary to nourish and bring it to maturity. Now this nursing of a life which needs such assistance for its proper development is only an emblem of what kindness is always doing in higher spheres. The kindness of the individual is constantly seen nurturing and promoting the growth of those of the human family whose future would be a blank without such aid. Human kindness in institutions is conspicuous for the mode in which it selects and trains those little ones who need a careful hand to form them for a higher life. And although of course there must be ingratitude in an imperfect world, do not the individual and the institution in numberless cases find that kindness has borne beautiful blossom? How many an uninteresting old life has become rejuvenescent through the adoption of the young life; has rejoiced in its productions, and been glorified by its purity! v.

**Kindness, The Transforming Power of.**—There is nothing in the nature of the wildest animals to make their future gentleness and sociability either impossible or improbable. Even the devourers and their prey may by kind and judicious management be trained to live peaceably and harmlessly together. Nothing appears more effectual to produce this pleasing amelioration than patient and persevering, kind and gentle treatment. They are now wild and savage from the appointed circumstances amid which they are at present ordained to live. > The jackal, when taken young, acquires the same affectionate disposition as the dog. The lion has been repeatedly tamed, and so has the fox. Rubens had a tame lion four weeks in his room to paint from. The large tiger-cat is easily tamed. The otter may be taught to catch fish for its master. The Egyptian ichneumon may be softened so as to be kept in a house like a cat. The weasel may be trained to follow a person anywhere. We see the bear repeatedly in our streets. The

badger may be also made docile if caught young. The rhinoceros and hippopotamus may be tamed in some degree. The tiger, if taken young, may be domesticated. Cuvier describes a young wolf that was brought up like a young dog, and differed in nothing from the tamest dog. Father Carli, in his history of Angola, mentions that he had taught monkeys to attend him, to guard him while sleeping against thieves and rats, and to fetch water. The little "Arab" of the London streets may by taming become a learned man. P.

**Knowing Look, The.**—The placid, half-indifferent, yet keen look which is so observable in some "knowing" men reminds one of the chameleon's look. These men seem able to stare all ways at one time, to see nothing, and yet to observe everything. From the peculiar arrangement of the nerves and muscles, each of the eyes of the chameleon can move independent of the other. They can move in different directions, one upward, the other downward, the one forward, the other backward, and in all sorts of ways, without the head undergoing any change of position. "You cannot tell," says Mr. Gosse, "whether the creature is looking at you or not; he seems to be taking a *general view* of things; looking at nothing particular, or rather, to save time, looking at several things at once. Perhaps both eyes are gazing upward at your face. A leaf quivers behind his head, and in a moment *one eye* turns round toward the object, while the other retains its upward gaze; presently a fly appears, one eye rapidly and interestedly follows all its movements, while the other leisurely glances hither and thither, or remains steady." The creature verily has the "knowing" look.

MU.

**Knowledge as a Saving Power.**—Hurricanes, revolving storms, or "cyclones," differ from mere local and temporary exaggerations of the regular atmospheric currents in this, that they are in the nature of vortices or circulating movements participated in by masses of air of from fifty to five hundred miles in diameter, revolving the more rapidly the nearer the center, up to a certain distance or radius *within which there is a calm*. The

place of this center of rotation meanwhile advances steadily along a definite line upon the globe, with a velocity varying from two to thirty or forty miles per hour, and pursuing a track which in some of the hurricane regions, as in the West Indies, has a singular fixity of geographical situation and geometrical form. But the character which it is of most importance to a seaman to know, and the knowledge of which may often save his ship from disaster, as ignorance of it has repeatedly been the cause of catastrophes which might have been avoided, is this, viz., that in the same hemisphere great cyclones *always revolve the same way* (so far at least as our present information extends), but that this direction is opposite in opposite hemispheres. → In the northern hemisphere their rotation is *retrograde*, i.e., contrary to the motion of the hands of a watch laid face upward, or in conformity with the motion of the hand in *unscrewing* a screw. In the southern their rotation is *direct*, conformable to the hands of a watch or to the motion of a hand screwing *in* a screw into a horizontal board. ‡ And this general fact affords the following simple rule by which to know at any given moment *the bearing of the center of the vortex*, which is the point of extreme danger, by reason of the fury of the wind in its vicinity, its sudden reversal, and the terrible sea which prevails there. When *sure* that you are within the limits of a cyclone, stand erect, and look full in the wind's eye, then, if in the northern hemisphere, turn yourself 90° or one quarter of the circle round *to your right* (if in the southern, as much to your left), and you will have the center of the current facing you. Thus if in the northern hemisphere the wind at the ship be due north (blow *from* the north), the center bears due east from the ship's place.

MA.

**Latent Germs.**—Germs of life may remain dormant for incalculable periods where least expected. Certain soils, by exposure to the sun's rays, or by aid of peculiar manures, will produce plants where no preëxistent root or germ could rationally be supposed to exist; and peculiar and long-intervening seasons will give birth to insects from causes not to be divined.

In like manner germs of thought hidden in old phrases, old institutions, old books, or forgotten biographies, spring into vigorous activity, to the astonishment of mankind, when the conditions of human affairs happen to be propitious for their development. The germinal principle of a revolution may slumber for many a century in an unsuspected proposition. J.

**“Law,” The “Ordinary,” and the “Whole Law” Distinguished.**—Many mistakes and many debates arise because men do not distinguish the difference between that which is an ordinary law and that which is the whole law. Let us illustrate this by the following example: every one knows that “fire burns,” and if we touch what is red-hot it will most painfully blister the skin, and that if the contact be prolonged only for a few seconds, the flesh will be destroyed with inexpressible torment. This is the *ordinary* law of Nature, and what we naturally conceive to be the *whole* of the law of Nature regarding the action of fire and of red-hot substances. But if a quantity of lead be melted, and made so hot that it seems incapable of any further increase of temperature, the hand may be dipped into it without sustaining the slightest injury, without being in the slightest degree burned. This is well known to chemists; and men with nerve enough to make the plunge have many times proved it to their startled friends and pupils.

LI.

**Law, The Pitfalls of the.**—The insect known as the antlion, in its larval condition, is truly a wonderful being. A ruthless destroyer of insects, it chooses some sandy spot where the soil is as far as possible free from stones, and begins to form the celebrated pitfalls by which it is enabled to entrap ants and other insects. Crawling backward in a circular direction, it traces a shallow trench, the circle varying from one to three inches in diameter. It then makes another round, starting just within the first circle, and so it proceeds, continually scooping up the sand with its head and jerking it outside the limits of its trench. By continuing this process, and always tracing smaller and smaller circles, the grub at last completes a conical



pit, and then buries itself in the sand, holding the mandibles widely extended. Should an insect, an ant, for example, happen to pass near the pitfall, it would be sure to go and look into the cavity. No sooner has the ant approached the margin of the pitfall than the treacherous soil gives way, the poor insect goes tumbling and rolling down the yielding sides of the pit, and falls into the extended jaws that are waiting for it at the bottom. A smart bite kills the ant, the juices are extracted, and the empty carcass is jerked out of the pit, and the ant-lion settles itself in readiness for another victim. This pit adumbrates American law, the ant-lion the lawyer, and the victim the litigant. The innocent litigant, in want of his rights, looks inquiringly at the attractive pitfalls of the law to see if there is anything therein to his advantage. Very suddenly he finds himself involved in most mysterious processes. With great velocity he next discovers that he has lost his balance and is reduced to a most helpless condition. Soon afterward, on missing his happy face from society, his friends make the melancholy discovery that, in accordance with the object of the legal pitfalls, he has been pounced upon by the expectant lawyer, sucked dry, and ejected into the abyss of bankruptcy. H.

**Leadership, Capacity the Title to.**—Capacity, not adventurous distinction, is the title to leadership. The institution of "ruling families" and privileged classes, which obtains among men, is despised even by horses, who will have none but those who give evidence of capacity to rule over them. The wild horses in the Ukraine, (and among the Cossacks) going in troops of four or five hundred, obey, apparently by compact, the command of one of their own number. He by signs of voice makes them proceed or stop at his pleasure. When the troop is attacked by wolves or otherwise, he gives orders for the necessary arrangements for defense; if he finds any horses out of their place or lagging behind, he obliges them to take their proper station. These animals, Smellie tells us, of their own natural impulse march in as good order and steadiness as our trained cavalry; they form companies, and pasture in files and

brigades, without confusion or separation. The chief holds office for four or five years; when he grows weaker and less active, another horse, conscious of strength and ambitious of command, springs forth from the troop and attacks the old chief, who probably resists, and if not vanquished keeps his command, but if conquered retires with evident shame and dejection into the common herd. The conqueror is then recognized as sovereign and obeyed. ~~When~~ When will men learn to profit by this example of the horse ?

R.

**Liberty, An Unconquerable Love of.**—"It is remarkable," says Boitard, "that the elephant is not, and never has been, a domestic animal, but a captive who only obeys through terror. However tame he may be, he never fails to escape into the woods to resume his savage life if an opportunity occurs. The need, therefore, arises that on a long march he shall have his driver, or mahout, on his back to guide him, threaten him, and prevent him from taking to flight. His love of liberty is as great as that of the wildest animals, and in the female elephants it even overpowers maternal love; therefore, when suckling their young they are never released from their chains, for experience has proved that they will abandon them without regret if circumstances should enable them to effect their escape."

D.

**Life, One Essential Condition of.**—No place is incapable of supporting vegetable life of *some* kind; and although there are districts where grass and trees are never seen, and perpetual desolation gives the idea of their being worn out and effete, as happens in the great deserts in the interior of northern Africa, even there it is not so much an absolute incapacity to sustain life as the want of springs of water that causes the absence of it. In those sweet spots which have become a metaphor for all happy and blessed breaks in the history of trouble and sorrow—the "oases" of the desert—water is present, and vegetation is triumphant. Such an "oasis" was Elim, where there "were twelve wells of water, and threescore and ten palm-trees."

LI.

**Life, The Ubiquity of.**—Wisely have the fungi been provided, in the rapidity of their growth, the simplicity of their structure, the variety of their forms, and in their amazing numbers, for their appointed task in the economy of Nature. Not a leaf that falls from the bough, not a blade that withers on the lea, but is seized by the tiny fangs of some special fungus organized to prey upon it; not a spot of earth can we examine, where vegetable life is capable of growing, but we shall find a vegetable as well as an insect parasite, keeping its growth in check, hastening its decay, and preserving its remains from being wasted. # Ardently engaged in studying the laws of those functions by which life is carried on, begun, or continued from one generation to another, the physiologist seeks illustrations of his favorite pursuit in every living object that presents itself to his observation. He travels nowhere without meeting something worthy of his attention, for it may be truly said that most parts of this world are dwelling-places of living creatures, and that we can scarcely find a spot uninhabited by beings endowed with life. We find life in the air, in the water, in the eternal snows of the Arctic regions, and the burning sands of the torrid zone. We find it near the summits of the loftiest mountains and in the deepest caverns; even mephitic pools, poisonous soils, and boiling springs teem with animals and plants adapted to the peculiar circumstances in which they are placed, and furnished with an organization wisely contrived for their existence. s.

**Life, Fullness of.**—Some men's natures are characterized by a remarkable fullness of life. Socially, morally, intellectually, spiritually, they are characterized by perennial vigor. They remind us of that wondrous fullness of life which is so striking a peculiarity of the palm-tree. Beside the blossom grows continually the fruit, and from the fading circle of its leaves there springs with restless energy the fresh green. Thus it is that everything about the palm assumes the expression of inexhaustible vigor. # And when at last the tree lies dead beneath the weight of ages, even then a thousand labyrinth filaments of

parasitical plants twine round the trunk, and clothe it deceptively with an odorous and many-colored but spectral life.

ST.

**Life under Right Conditions, Lastingness of.**—Properly ripened seeds, if placed in certain conditions, are literally *immortal*. That is to say, they are capable of retaining their growing power indefinitely; not merely for a few centuries, but for thousands of years—how long, indeed, no man can say. The earthly crust of our planet appears to be stocked in every part with seeds that have been produced in years gone by, scattered upon the surface, and subsequently covered up with soil. Whenever the ground is disturbed, either by the plow or by the spade of the railway excavator, or for any purpose which causes its depths to be overturned, that portion which was many feet below being thrown to the surface, and exposed to the air, the sunbeams, and the moisture of dew and rain, immediately there springs up a crop of young plants, certainly not originating in seeds only just then brought from neighboring fields, and as certainly from seeds that have been lying in the soil for ages. How they came to be covered up is easy to conceive when we see with our own eyes what is done by wintry floods, and the sweeping down of great masses of earth and soil, which accumulate often to a considerable depth, and are no doubt similarly charged with seeds that, after waiting their turn, will some day grow. For it is a clearly established fact that no seed can germinate or begin to sprout unless it have the threefold influence in direct operation upon it of warmth, moisture, and the atmosphere. Let it be shut in from the access of these and it lies passive, giving no sign of life or growth, and incapable of doing so.

LI.

**Life, The Expansiveness of Strong.**—The banian or Indian fig-tree (*Ficus Indica*) surpasses in diameter the finest oaks of Europe, and is of evergreen foliage. It possesses the power of reproduction and multiplication. It throws off numerous branches, of which several redescend toward the earth, force their way into it, take root therein, and in their turn de-

velop into new trunks, whence spring other boughs that go through the same process of fructification ; so that a single stem spreads in time into a kind of forest, and the canopy formed by the outgrowth of a solitary tree will frequently overshadow an area of seventeen hundred square yards. D.

**Life, The Mirage of.**—The ardent imagination of youth, and the eager desire of hopeful men, often produce to the eye of faith glorious and glowing visions of a bright future, which, alas ! are like a mirage. We know that the mirage for the most part occurs in extensive plains when the weather is calm and heated by the sun. The plains of Asia and Africa have become celebrated in this respect ; thus during the expedition in Egypt the French army frequently experienced cruel deceptions. The ground of Egypt forms a plain perfectly horizontal ; the villages are situated on small eminences. In the morning and evening they appear in their proper places, and at their real distances ; but when the ground is highly heated, the country resembles a lake, and the villages appear to be built on islands, and reflected in the water. As we approach, the lake disappears, and the traveler, devoured by thirst, is deceived by his hope. ON.

**Life, Independence in Higher Stages of.**—Many people fancy that a little fly is only little because it is young, and that it will grow up in process of time to be as big as a bluebottle. Now this idea is entirely wrong ; for when an insect has once attained to its winged state, it grows no more. All the growing, and most part of the eating, is done in its previous states of life, and indeed there are many insects, such as the silkworm moth, which do not eat at all from the time that they assume the chrysalis state to the time when they die. C. O.

**Life Infinitesimal.**—The genus *Vibrio* is the type of a tribe of animalcules commonly known as microscopic eels, remarkable for their extraordinary minuteness. One species is parasitic upon wheat, and when full grown attains a quarter of an inch in length ; but the young are so microscopically small that thirty thousand might be contained in a single grain of wheat. D.

**Life, The Tenacity of.**—The vitality of the large-bodied moths is quite astonishing. You may even stamp upon them and yet not crush the life out of that frail casket. If you drive the life out of one half of the creature, it only seems to take refuge in the other, and then retains a more powerful hold. So unless the entire mechanism of the insect be killed, the poor creature may live for days in pain.  $\pm$  C. O.

**Life where Least Expected.**—The great Karoo<sup>at</sup> at the base of the Roggeveld and Nieuveld chain is three hundred miles in length, eighty miles in breadth, and two thousand feet above the sea-level. Its soil presents throughout its whole extent, for the greater portion of the year, not a trace of vegetation. During the long dry summer months the smallest birds would not find wherewithal to sustain their existence in these somber deserts, whose solemn silence not even the murmur of an insect interrupts. Yet these regions, deprived of springs and running waters, are not always sterile deserts, are not always desolate plains. In the dry season, the soil, a yellow ferruginous clay, acquires the hardness of brick, just as if it had been exposed to the fire of a furnace; but the roots and bulbs, protected by a ligneous covering, resist the devouring heat. The first rains revive them; they put forth their stems and branches; a myriad flowers reveal their sparkling colors; and the country which, a day or two before, had shown to the eye a bare and dreary surface, shines out in a panoply of splendor, as if a magician's spell had suddenly transformed it into a terrestrial paradise. But as the days lengthen, and the sun's power increases, the bloom and the beauty vanish, and the curse of fire once more descends upon the gloomy scene. D.

**Life in Apparent Death.**—The grains of wheat found in Egyptian tombs, on being planted in the soil of France, grew into waving corn. For three thousand years these grains had been without life, yet we cannot say they were *dead*; they were organic seeds, products of life, and had themselves once *lived*; they were developed from cells into seeds, and at this point in their development their vital activity was arrested, because the

necessary heat, light, and soil were wanting; but no sooner were these supplied, than the arrested activity was once more set free: the seed became a plant. # The microscopic animals known as rotifers become to all appearance dead when the water of the moss in which they live is evaporated, and in this state of suspended animation they may remain for years, recovering their energy on the addition of a little water; they may be dried and revived fifteen times in succession; but they are not dead in these cases, and they do not decompose. # Frogs and toads, especially the latter, when subjected to the action of intense cold, may be perfectly *frozen*, all their fluids becoming congealed, all their tissues rigid. Yet these animals are not dead. Let heat be cautiously applied, and the congelation ceases: in eight minutes life is once more in full activity.

PH.

**Life Preserved by Struggling.**—You lament that your life is one constant struggle; that, having obtained what you tried hard to secure, your whole strength is now required in order to retain it; and that your necessities impose on you the further obligation of additional exertions. It is so; but do not repine. As a rule, the maintenance of life is everywhere conditional on struggling. It is not only so with men and animals. It is so even in the vegetable world. You struggle with obstacles; but the very trees have to do the same. Observe them; take heart and grow strong. M. Louis Figuier says that the manner in which roots succeed in overcoming obstacles has always been a subject of surprise to the observer. The roots of trees and shrubs, when cramped or hindered in their progress, have been observed to exhibit considerable mechanical force, throwing down walls or splitting rocks, and in other cases clinging together in bunches or spreading out their fibers over a prodigious space, in order to follow the course of a rivulet with its friendly moisture. Who has not seen with admiration how roots will adapt themselves to the special circumstances of the soil, dividing their filaments in a soil fit for them almost to infinity, elsewhere abandoning a sterile soil to seek one farther

off which is favorable to them ; and as the ground was wide or less hard, wet or dry, heavy or light, sandy or stony, varying their shapes accordingly ? Here are wonderful energy, and illustrations of the way in which existence may be maintained by constant action. f v.

**Life, Action and Repose a Law of.**—There are action and repose even in the life of the tree. The circulation of the sap in the tree is in its most active state in the springtime. The plant is then full of liquid, and in new plants the juices flow at the slightest incision. In spring, according to the poetical expression consecrated by use, the vine and other plants bleed ; but when the leaves are fully developed, they will no longer bleed when wounded. When the branches develop themselves and consolidate, the movement of the sap becomes slower ; it is sometimes roused toward the end of summer, when, the spring having been premature, the materials which the plant has elaborated for the vegetation of the following year have been set to work before their time. After the fall of the leaf, and when the approach of winter lowers the temperature, the movement of sap is stopped entirely ; the tree arrives by little and little at a state of almost absolute repose : this is not death, but life which awaits its reawakening. # In human life we have, but still more plainly written, this same law. From youth to manhood, and from manhood to old age, how incessant is the activity during all but the few hours allotted to repose ! As Ovid says,

“ Alternate rest and labor long endure.”

And at the end of all the activity, and the last long repose, which seems but is not death, are we not, also, like the tree, to have our reawakening in a day to dawn as surely and as brightly as the spring ? v.

**Life a Law of Nature, Involuntary Destruction of.**—Few persons, while indulging in the luxury of early green pease, are aware how many insects they unconsciously swallow and destroy. When the pods are carefully examined, small dis-



colored spots may be seen upon them, each one corresponding to a similar spot on the opposite pea. If this spot on the pea be opened, a minute whitish grub destitute of feet will be found therein. It is the weevil in its larval form, which lives upon the marrow of the pea, and arrives at its full size by the time that the pea becomes dry. This larva or grub then bores a round hole from the hollow of the pea quite to the hull, but leaves the latter, and generally the germ of the future sprout, untouched. Hence these pease will frequently sprout and grow when planted. The grub is changed to a pupa within its hole in the pea in the autumn, and before the spring casts its skin again, becomes a beetle, and gnaws a hole through the thin hull in order to make its escape into the air, which frequently does not happen before the pease are planted for an early crop. After the pease have flowered, and while the pods are young and tender, and the pease within them are just beginning to swell, the beetles gather upon them and deposit their tiny eggs singly in the punctures or wounds which they make upon the surface of the pods. This is done mostly during the night or in cloudy weather. The grubs as soon as they are hatched penetrate the pod and bury themselves in the opposite pease, and the holes through which they pass into the seeds are so fine as hardly to be perceived and are soon closed. Sometimes every pea in a pod contains a weevil grub, and in consuming our dish of pease we therefore annihilate myriads of lives and extinguish the possibilities of myriads of others. But Nature seems to have ordained that man shall be the involuntary destroyer of life on a vast scale. Whenever he treads upon the ground, or drinks a glass of water, or breathes the air, he unintentionally massacres millions of lives.

MU.

**Life, The Illusions of.**—In youth, the view of our future life expands before us, a splendid region gleaming with a thousand tints of alluring magic light; its rosy pathway enticing our willing feet to ascend toward those lustrous hopes which tower before us, glowing and glistening under radiant skies, and which seem to offer an infinitude of abiding ambrosial joy. But oh

how soon that lovely view is changed ! Not through the glittering magical illusion of fancy's rays may mortals long behold it. For soon the clearer, stronger, though, alas ! the sadder light of truth flashes its keen shafts adown the heights of time upon all that fairy scene, revealing reality ; and amid the tempest of our tears we behold all our enchanted forms, celestial vistas, and gorgeous illusions crumbling, receding, and giving place to these chilling, hard, and rugged facts which coarsely now project themselves to disappointment's eye. We need to adumbrate a transformation-scene like this, for words alone will not describe it. It is the commencement of the summer, and we gaze on the ocean which washes the Spitzbergen coast. In this light this Arctic desert is imposing, grand, majestic. The outlines of the coast and of the icebergs are of the most fantastic and often of the most beautiful character—old ruined keeps of Norman castles, long lines of frowning battlements, minarets and domes of Moorish mosques, and the tapering spires, arched roofs, and flying buttresses of medieval cathedrals. Lit up by the radiance of an Arctic sun, they wear a most singular and weird beauty. Over the frozen ocean stand monuments of fantastic design, whose radiant glittering surfaces reflect in changing lights of amethyst, azure, vermilion, gold, and emerald, the wondrous fires of the northern Auroras. But the glory is transient. The summer sun has dawned. He darts obliquely his rays upon all this scene, and then all this crust splits up and becomes dislocated ; the gorgeous illusion is ended, the confusion spreads ; the ocean currents carry off to sea the blocks and floes of ice which roll and glide, and cross and chase each other, hurtling together in an indescribable *mêlée* and with a fearful tempest of sounds. The illusion alone remains.

D.

**Life, The Improvident.**—The Esquimaux inhabit the immense icy plains which extend into America even beyond the Polar circle. During the winter they often fast several days at a time, and remain immured in their huts like hybernating animals ; but at length, driven by famine and by want of oil,

they go forth upon the ice in search of the seals which come up to breathe. When they have killed one they regale themselves upon it until only the bones remain, after which they endure a new period of privation. Thus they live from day to day, in continual alternations of gluttony and abstinence; all idea of providing for the future is as completely out of their heads as it is out of many of those in our own land who have had greater advantages and more opportunities of knowing right.

D.

**Light, Instinctive Love of.**—A strong tendency is exhibited by certain plants to follow the light from an apparently instinctive consciousness of its being necessary, if not to their existence, at least for their well-being. This phenomenon is beautifully shown by many facts, of which one will serve as an example. One spring a potato was left behind in a cellar where some tools had been kept during the winter, and which had only a small aperture at the upper part of one of its sides. The potato, which lay in the opposite corner, shot out a runner which first ran twenty feet along the ground, and crept up along the wall, and so through the opening by which light was admitted. The *Chrysanthemum Peruvianum* turns continually toward the sun, and is said to cover itself with dewy clouds which cool and refresh the flower during the most violent heat of the day. Some men have an instinctive love of higher light. In order to obtain the truth they perform prodigies of skill and endurance. Some of our most noble characters have emerged into positions of conspicuous usefulness by following their instinctive love of light, which has guided them out of darkness, privation, and obscurity.

I. L.

**Light is Regulated to our Capacity, All.**—We see objects by reflected light; in other words, the object must first be illuminated, and then it must reflect a certain amount of this light into our eyes. But as the entrance of too many or too bright rays would dazzle vision, while too few would leave it obscure and indistinct, an ever-vigilant sentinel—the iris, on which the color depends—is posted across the front of the eye,

to regulate by the expansion or contraction of the pupil the exact number of rays that ought to be admitted. The full blaze of light from the sun we could not endure. ~~Our~~ Our mental eye has also been evidently designed to receive not full but regulated light. Who could bear the full glare of the brightness of the spiritual world? We have but reflected and limited light. With our present faculties and duties we must suppose that the arrangement is the one most suitable to us. Let us at all events recognize the existence of fact. We will neither pretend that we have seen the absolute glories of the sun, nor of "the Light of the world." Our perceptive organs have not been constructed for either purpose. BE.

**Light has no Substitute, True.**—Clear and brilliant light often brings out exquisite colors, as happens among the Alps and also in the north frigid zone, where the humble little plants called lichens and mosses are in many cases dyed of the most brilliant hues, purple and gold predominating. Warmth, in like manner, will stimulate vegetable growth in the most astonishing manner, but it is growth not necessarily accompanied by the secretion of valuable substances, such as give quality and real importance to the plant. (In) English hothouses, for example, there are plenty of spice-trees, those generous plants that yield cinnamon and cassia, the nutmeg and the clove; but although healthy and blossoming freely, they never mature their aromatic secretions. Though they have artificial heat equal to that of their native islands, which burn beneath the sun of the Indian Ocean, they cannot be supplied with similar and proportionate solar *light*. The cloudy skies shut them in from the full and direct radiance of the sunshine, and wanting this, heat alone will not avail. LI.

**Light a Healing Power.**—Apart altogether from the cheerfulness and mental serenity (important auxiliaries in the eradication of disease!) which the bright rays of the sun invariably engender, light has a thermic influence upon the mind and body when prostrated by serious ailments, and certainly acts beneficially by chemically purifying the blood of the patient, as well as the atmosphere of the apartment he occupies. I. L.

**Light, Children of the.**—There are children of light and children of darkness. The latter shun the bright, the pure azure shining sky of truth with all its loving beams. Their world is like the world of insects, and is the world of night. Insects are all light-shunners. Even those which, like the bee, labor during the daytime, prefer the shades of obscurity. The children of light are like the birds. The world of birds is the world of light—of song. Nearly all of them, says Michelet, live in the sun, fill themselves with it, or are inspired by it. Those of the south carry its reflected radiance on their wings; those of colder climates in their songs; many of them follow it from land to land.

T. B.

**“Lilies, Consider the.”**—The water-lilies never grow in foul water, and always prefer that which is in steady though slow movement, loving especially the little bays along the edges, where they can spread their broad leaves upon the surface undisturbed, and expand their argent cups, brimming with golden stamens, to the light of the sun. Toward evening they close their petals in a kind of sleep, and during the period of their highest life, which is that of the preparation of the seed that is to renew the plant, they not only close, but sink below the surface of the stream.

LI.

**Liquidator, The Speculative.**—Our winding-up courts have revealed a vast multitude of persons speculating in the liquidation of public companies, who are called “wreckers.” These “wreckers,” when once settled on the corpse of a company, cannot be induced either by decency or pity to move away. Greedy and cruel, they are like the tawny vulture (*Gyps fulvus*), which feeds, like the rest of its family, upon carrion. When a party of these vultures has once taken possession of the carcass of a large animal, they are said never to quit it as long as a morsel of the flesh remains, so that they may be seen in the same spot for days together. When fully fed, or rather crammed with food, they are quite incapable of flight; and if suddenly disturbed in this happy condition, they are compelled to disgorge the greater part of their banquet before they can rise.

MU.

**Little Influence Added to a Great Enterprise, The Use of a.**—A little river may be received into a large one without augmenting either its width or depth. This, which at first view seems a paradox, is yet very easily accounted for. The little river in this case only goes toward increasing the swiftness of the larger, and putting its dormant waters into motion. / A.

**Little Things, The Aggregate Capacity of.**—At the first glance it seems improbable that the animalcules should possess any influence over the movements of the ocean—the symbol to human minds of immensity—but we might as well deny the action of the drops, the molecules of salt and water which compose it. What matters their minuteness when numbers compensate? And the number of animalcules which work and throb in the bosom of the seas is as incalculable as that of the drops of water. Their fecundity is inconceivable; the waters are literally composed of them; they are the “living waters” of Scripture. They preserve the identity of the composition of the sea by absorbing the salts mostly with a basis of limestone which proceed from the washings of the land. They assimilate these solid elements, and transform them into shells, madrepores, corals, whose cells group together, cross, and accumulate upon one another until the dense strata which they gradually form are prepared to serve as the foundation of islands, archipelagoes, perhaps of continents. MY.

**Littleness, The Spirit and Security of.**—A chapter in the history of the whale affords a good illustration of the spirit and security of littleness. As the whale is an inoffensive animal, it is not to be wondered that it has many enemies, willing to take advantage of its disposition and inaptitude for combat. There is a small animal, of the shell-fish kind, called the whale-louse, that sticks to its body as we see shells sticking to the foul bottom of a ship. This insinuates itself chiefly under the fins; and whatever efforts the great animal makes, it still keeps its hold, and lives upon the fat, which it is provided with instruments to arrive at. Now this transaction may be taken

as a very true revelation of the usual workings of the spirit of littleness. Littleness is always living on greatness. The great man has always some little creature at his side, who is wheedling for himself the favors by which he lives. Moreover, littleness is often safe because of its littleness. The great man has no arts or appliances by which to detect and thwart the tactics of the little knaves and tiny rascals who compass him about. Again, littleness knows that its seclusion is its security, so that, like the whale-louse, it gets, as it were, under the fins of greatness—to those places where it can gratify itself without being detected. Like this same creature, too, littleness wherever found—whether in the church, in the market, or in the home—is furnished with a mechanism admirably adapted for its sustenance, servility, baseness, and lying being among the more prominent features thereof. A.

**Love, The Courage of.**—It is said that the great bustard will forsake her nest if only once driven from it by apprehension of danger; but when the eggs are laid, and still more when the young are produced, it is only repeated meddling with them that will induce the parents to forsake them. H1.

**Love, Aspects of.**—Love is a light upon the sea of life. Upon the tranquil scenes of domestic and social existence its graces gleam and its virtues sparkle, so that as we move along we are reminded of a calm evening on the phosphorescent sea—no gloom, no excitement, no harsh noises. Each dip of the boatman's oar is accompanied by a brilliant flash, a tremulous radiance plays round the sides of his little vessel, and a long stream of light follows in her wake. In stormy times, too, love is like that phosphorescent sea, which then exhibits a spectacle of awful grandeur. Each wave appears crested with light, and, as it crashes against the sides of a ship, looks like broken masses of liquid fire. And when life is beset with gloom unutterable, and its ways resemble a sea dark and tempestuous, the light of love irradiates the surging scene with its self-sacrificing beams; its flashes of honest indignation start as the forces of

oppression plow their way, while its thousand inexplicable concussions glance and gleam over every troublous billow as it breaks. s.

**Lowly Teachers of Prudential Virtues.**—The exterior of a hive, says M. Victor Rendu, gives the best idea of this people, essentially laborious. From sunrise to sunset all is movement, diligence, bustle; it is an incessant series of goings and comings, of various operations which begin, continue, and end, to be recommenced. Hundreds of bees arrive from the fields, laden with materials and provisions; others cross them and go in their turn into the country. Here, cautious sentinels scrutinize every fresh arrival; there, purveyors, in a hurry to be back at work again, stop at the entrance to the hive, where other bees unload them of their burdens; elsewhere it is a working-bee which engages in a hand-to-hand encounter with a rash stranger; farther on the surveyors of the hive clear it of everything which might interfere with the traffic or be prejudicial to health; at another point the workers are occupied in drawing out the dead body of one of their companions; all the outlets are besieged by a crowd of bees coming in and going out; the doors hardly suffice for this hurrying, busy multitude. If all appears disorder and confusion at the approaches to the hive, this tumult is only so in appearance; an admirable order presides over this emulation in their work, which is the distinctive feature in bees. These insects preach to us diligence, activity, vigilance, ingenuity, and order. If their sermon were listened to, and these five virtues were embodied in the lives of all working-people, the material state of society would become glorious. I.

**Lurking Dangers.**—Many of the most deadly snakes lie concealed just below the surface of the sand, ready to strike a death-blow to the incautious traveler; others lurk and hide in the branches of trees and bushes, from which they dart upon the unwary. The wonderful resemblance in color they bear to the places in which they are found renders them difficult to be seen by the unpractised eye. However wary you may be,



it is often difficult to escape with your life. These reptiles resemble the lurking dangers which encompass us on every side in our progress through this world. Diseases, treacheries, falsehoods, and troubles seem to be in wait for us during a large portion of our journey. We have hard work to elude them; and if we ourselves escape, we have the melancholy misfortune to see them strangling or poisoning our friends. I. O.

**Luxuriance a Hindrance to Progress.**—We have observed people who have been confused with the luxuriance which surrounded them. So sumptuous was the provision of every kind that the taking of any step was only an exhibition of the difficulty of action. "The embarrassment of riches" is not a figure of speech, but a fact. The man who is surrounded by too much luxuriance is like a traveler amid the profuse flowering vegetation which characterizes some of the Asiatic steppes of the temperate zone. On crossing the trackless portions of these herb-covered steppes in the low carriages of the Tartars, it is necessary to stand upright in order to ascertain even the direction to be pursued through the copselike and closely crowded plants that bend under the wheels. Some of these steppes are covered with grass; others with succulent evergreen, articulated alkaline plants; while many are radiant with the effulgence of lichenlike tufts of salt, scattered irregularly over the clayey soil like newly fallen snow. It is obvious that the traveler's progress would be much easier across the commons and fields of our own land, where Nature has not been so prodigal in the luxuriance of her gifts. In like manner, the movements in social life of persons who have neither poverty nor riches are noticeably more easy and less anxious than those of such individuals as are literally surrounded with luxury, who on account of the very abundance of their possessions are puzzled as to the course they are to pursue for even their gratification from day to day. VI.

**Majestic Twaddle.**—We are too prone to erroneous ascription. Upon mere hearsay we accept certain persons and institutions as being wonderful, and then ever afterward persistently

ascribe to them qualities and virtues which they do not possess. Vulgar people speak of "aristocratic" grace, of the "nobility" of peers, the "majesty" of royalty, and so on and so on in dismal, snobbish monotony. This mistaken habit is well illustrated by the error which people fall into when they assign to the lion qualities which he does not possess. Dr. Livingstone says: "Nothing that I ever learned of the lion led me to attribute to it either the ferocious or noble character ascribed to it elsewhere. It possesses none of the nobility of the Newfoundland or St. Bernard dogs. The same feeling which has led the modern painter to caricature the lion has led the sentimentalist to consider the lion's roar the most terrible of all earthly sounds. We hear of the 'majestic roar of the king of beasts.' (It is indeed well calculated to inspire fear if you hear it in combination with the tremendously loud thunder of Africa on a night so pitchy dark that every flash of the intensely vivid lightning leaves you with the impression of stone-blindness, while the rain pours down so fast that your fire goes out, leaving you without the protection of even a tree, or the chance of your gun going off. But when you are in a comfortable house or wagon the case is very different, and you hear the roar of the lion without any awe or alarm. The silly ostrich makes a noise as loud, yet he never was feared by man. To talk of the majestic roar of the lion is mere majestic twaddle. In general the lion's voice seems to come deeper from his chest than that of the ostrich; but to this day I can distinguish with certainty between them only by knowing that the ostrich roars by day and the lion by night."

Y. M.

**Man as Revealed by Society.**—As a rule man's appearance is not pleasing when he is seen in his own isolation. His brightest and best colors are revealed through the medium of relationships. If in isolation, he is like a metal in its own vapors. For example: every metal can be burned, and heat sufficient being employed, the burning mass can be made to evolve a vapor. Every metal burns with a certain invariable color, and the light of these colors can be projected through a

prism. If so projected, a line across the spectral image results, of certain specific size and also color; but if the light of a burning mass of metal be transmitted through its own vapors, then the band of color it would have yielded on the spectrum is quenched as to color, and the result is not color but black. Now we say that this is something like the difference which there is between man alone and man in society. Man in isolation appears only in the melancholy colors of a recluse or an anchorite. But when beheld through the family circle, the club, the confederation, or the great and good organizations of society, he appears to a far greater advantage, for then, instead of being gloomy, his character assumes hues of beauty and splendor of variety which may gladden and delight all eyes.

S. N.

**Man the Enemy of Man.**—While on the steppe tigers and crocodiles contend with horses and cattle, so on the forest borders and in the wilds of Guiana the hand of man is ever raised against his fellow-man. With revolting eagerness some tribes drink the flowing blood of their foes, while others, seemingly unharmed, yet prepared for murder, deal certain death with a poisoned thumb-nail. The feebler tribes, when they tread the sandy shores, carefully efface with their hands the traces of their trembling steps. Thus, as Humboldt declares, does man, everywhere alike, on the lowest scale of brutish debasement and in the false glitter of his higher culture, perpetually create for himself a life of care. And thus, too, the traveler, wandering over the wide world by sea and land, and the historian who searches the records of bygone ages, are everywhere met by the unvarying and melancholy spectacle of man opposed to man. ‡

VI.

**Man and a Frog, The Resemblance between a.**—The frog must be classed among the comic types of the animal creation. That it should be so arises chiefly from his resemblance to man. Who is there that has not seen men with froglike countenances? These are for the most part beardless, short-necked heads, obtusely shaped faces, with bald pates, a straight

or partly flattened nose, prominent eyes, a wide mouth, receding chin, and puffed-up cheeks. If to such physiognomy be joined a fair, round-bellied, abbot-like stature, no single feature will be wanting to make the resemblance complete. That the frog's head is always flat does not lessen the resemblance: it is the eyes as well as the cheeks which are mainly instrumental in producing the likeness. With unmistakable importance do they present themselves: large, round, sprightly, capable of a fixed, bold look, and in certain species surrounded by lids. Their color varies from a deep black to a flaming yellow. In the frog's head mere indications of a nose and ear are to be seen, while the wide mouth is all the more conspicuous. The head, which is not raised upon a freely moving neck, is joined immediately to the trunk with slender, delicate articulations. The hind leg is lengthened to an extraordinary degree; indeed, besides the immense toes, no other animal can show so human-looking a leg as the frog. The formation of the bones and muscles is also the same as in man, the latter forming a perfect calf, while the nakedness of the animal's body causes the resemblance to show more strikingly. The frog is indeed an anthropomorphism. Who is there when bathing, as his comrade skilfully swims past him, has not been reminded of the green-coated paddler, as he jumps from the bank, and with regularly changing stroke divides the waves? Owing to this very resemblance, a celebrated natural philosopher of the last century was betrayed into describing the petrified skeleton of a frog of a former age as the bones of an antediluvian man; and on this account, too, does the fable of the metamorphosis of the Lycian peasants into frogs take such hold upon our fancy and strike us as so appropriate.

ST.

### **Man, A Domestic Resemblance between Reptiles and.**

—It is not uncommon to hear persons speaking of their guardianship of their children as though it were a virtue. It may or may not be so, according to circumstances. But this is quite certain, that the love of offspring, and the desire to guard it, are exemplified by reptiles as well as by men. It may not be

flattering to the officious mother of a little family of children to tell her that those exertions of hers, for which she expects so much applause, are very analogous to the efforts which a respectable reptile will put forth on behalf of its progeny; but such is the fact. For Mr. Wood tells us that some species of reptiles are very jealous about even their eggs. They keep a strict watch over them; and several of the larger serpents have a curious fashion of placing the eggs in a heap, and then coiling themselves around them in a great hollow cone, in order the better to protect them from possible harm. If they do not use a perambulator for them, it is obviously because that is unsuitable, and not from want of interest. IL.

**Man, The "Climbing."**—We have all met with the man who can never do things as other men do them; who, on the ordinary levels of daily life, never seems capable of standing or advancing. His mind is ready enough in moving in the masses of complicated speculations, and twisting and turning in labyrinthian schemes whose tortuous windings he cannot see the end of. But directly the plain, the straightforward, the firm path of every-day life is under him, he staggers as if quite out of his element. So he is. Though a member of the human family, Nature has created him with a peculiarity which makes him a "climbing" man, and not one of those who walk up-rightly. He has his representative among the sloths. The three-toed sloth is the only mammal which can neither walk nor stand. He is desperately slow in his motions, but still when he is above, in the winding branches of the trees, he does climb about with some aptitude. On the plain he is helpless; and even in his climbing he is not of much service. Strange that those who can climb so very high cannot walk on a plain road for bread and cheese. Strange that "climbing" men possess every sense but common sense. I.

**Man, The Vain.**—The vain man is like the peacock. But his vanity is offensive, while that of the peacock is amusing. Should a word of praise reach the peacock's ear or the hen show herself in his neighborhood, in a moment the flowery

wheel is unfolded, he stretches his glittering neck and utters a displeasing, catlike cry; while, on the other hand, he retires from the sight of the indifferent observer, and in the molting season, when he has no fine feathers to show, he withdraws into solitude. His flight is a mere fluttering that raises him very little above the ground; yet he likes to perch on a neighboring roof-ladder, or some other lofty spot, in order to show himself to advantage and be admired. O little Tom Grandsnob, see yourself in this picture !

ST.

**Man a Worse Animal than he was Intended to be.—**

Some creatures are unquestionably used as scourges; but perhaps the less we mortals say about such animated pests the better. They act up to their own organization, but never beyond; while it is far otherwise with mankind. The serpent employs its poisoned fangs to procure food or avert peril, real or fancied; the jaguar uses its terrible incisors in the destruction of its prey; and the shark avails itself of its dental apparatus to assuage its appetite. But man, says Hugh Miller, must surely have become an immensely worse animal than his teeth show him to have been designed for; his teeth give no evidence regarding his real character. Of our racks and thumb-screws, our inquisitions and oubliettes, our noyades at Nantes and our mitrallades at Lyons and Toulon, there is no prophetic intimation in our dentology.

C. B.

**Mankind, The Supersedure of.**—During the primitive epoch the mineral kingdom existed alone. The rocks, silent and solitary, were all that was yet formed of the burning earth. During the transition epoch, the vegetable kingdom, newly created, extended itself over the whole globe, which it soon covered from one pole to the other with an uninterrupted mass of verdure. During the secondary and tertiary epochs, the vegetable and the animal kingdom divided the earth between them. In the quaternary epoch the human kingdom appeared. Is it in the future destinies of our planet to receive yet another lord? And after the four kingdoms which now occupy it, is there to be a new kingdom created, the attributes of which

will ever be a mystery to us, but which will differ from man in as great a degree as man differs from animals and plants from rocks? *f*

W.

**Man's Superiority Due to Intellect.**—Too much stress has been laid upon the proud upright position of man, and a great deal has been said and written concerning the sublime aspect of his countenance and the godlike dignity of his carriage. A moment's consideration will be sufficient to show that though he looks upward with ease and facility, he cannot, in this respect, claim any superiority. The eagle which gazes on the sun with undazzled eye, and makes his pathway among the clouds, yields not in dignity of appearance or power of locomotion to man, who merely walks upon the ground. Can man measure his beauty with the antelope, his speed with the horse, or his strength with the elephant? It is in virtue of his intellect, of his reason, and not of his bodily form, that he ranks above his fellows. It was in mind, not in body, that "God made man in His own image."

S.

**Man's Deportment, A Strong.**—A really capable man is always considerate of those about him. He does not with fussy haste push people in all directions, regardless of injuries, as does the weak ambitious man. He does not, like a serpent, sting those who oppose him; nor does he snarl at them like a dog. He calmly moves them out of his path. In the exhibition of his power, and in his regard for others, his march resembles that of a noble elephant. As the elephant is conscious of its own strength, it takes every precaution so that its heavy mass may not harm creatures that are weaker than itself. If it passes through a crowd, it opens a passage for itself with its trunk, and gently pressing forward its fore limbs, advances in such a manner as to hurt no one. *f*

M.

**Marauder, Plan for Punishing a.**—The long-eared owl (*Otus vulgaris*) is strictly nocturnal and at night is active in search of its prey, which among other things consists of small birds. These it is said to capture by snatching them from their roosting-places. However this may be, the finches, warblers,

*the animals.*

and other small birds seem to regard the owl in the light of an enemy, and show the greatest animosity toward him whenever they have an opportunity for such a display of their feelings.† If he should by chance prolong his predatory excursions so as to be surprised by the light of day when still at a distance from his favorite haunts, and thus be compelled to take refuge in some such imperfect shelter as a hedge or bush affords, the discovery, almost certain to take place, of the unfortunate sleeper in his temporary lodging is the signal for a simultaneous rising among all the small birds in the neighborhood, who flock to the place and raise such a commotion as rarely fails to cause the owl to change his quarters; and should he be at such a distance from the thick woods and plantations as to render his reaching them very difficult, or even impossible, while his senses are dimmed by the unwonted glare, the disturbance will sometimes last until the shades of evening put a stop to it by dismissing the little persecutors to their roosting-places. Communities of men who suffer from the proceedings of human marauders act upon much the same principle. They catch their royal rogue at a disadvantage and then avenge themselves.

MU.

**Marksman, A Good.**—The *Chaetodon rostratus*, which frequents the shores and mouths of rivers in India, feeds principally on flies and other small winged insects that hover over the waters. When it sees a fly at a distance on any of the plants in the shallow water, it approaches very slowly, and with the utmost caution, coming as much as possible perpendicularly under the object. Then putting its body in an oblique direction, with the mouth and eyes near the surface, it remains for a moment immovable. Having fixed its eyes directly on the insect, it shoots at it a drop of water from its tubular snout, but without showing its mouth above the surface, from whence only the drop seems to rise. This is done with so much dexterity, that though at the distance of four, five, or six feet, it seldom fails to bring the fly into the water.

P.

**Master Minds.**—The banian, or sacred fig of India, ac-



quires a prodigious size, not by the enlargement of its individual trunk, but by the multiplication of its trunks in a peculiar manner of growth. As its horizontal limbs spread on all sides, shoots descend from them to the earth, in which they root, and become so many secondary stems, extending their own lateral branches, which in turn send down fresh rooting shoots, thus ever widening the area of this wondrous forest, composed of a single organic life. In the forest of humanity there are master minds who compare with ordinary minds as the banian compares with ordinary trees. ~~They~~ They occupy vast space in the intellectual world, because they create and sustain, upon a grand scale, other kindred minds, who themselves take new roots and expand and grow in all directions, and yet continue one with the great parent mind. There is no room for base fungi where they flourish. Carlyle and Emerson are specimens of this order of mind. Their influence has extended far across the plains of human thought, and produced spiritual fruit for the healing of the nations.

RO.

**Matrimonial Life, Types of.**—There are some husbands and wives whose conduct to each other depends entirely upon surrounding circumstances. When there is plenty of money at the bank, and prosperity is shining upon the homestead, their affinity and love for each other is intense. But in the gloom of adversity, and under somber influences, they have no mutual attraction whatsoever, and their affections are kept in isolation. This type of the matrimonial life may be called the chlorin-hydrogen type. Chlorin and hydrogen are gases having a powerful affinity for each other—that is to say, they will unite when brought together in the daylight; but if we change the conditions, if we bring them together in the dark, their affinity is never manifested; and thus, while in the sunlight they rush together with even explosive force, they will remain quiescent in the darkness, and there for all eternity would form no combination whatever.

PH.

**Matter is Indestructible.**—When a candle burns in the air a chemical change is going on; and although the candle dis-

appears, the materials of which it is made up are not destroyed or lost; they simply pass into a state in which they are invisible to our eyes, but their presence may be ascertained by other means. Thus, if we burn a candle for a few minutes in a clean bottle filled with air, and afterward pour in some clear lime-water, we shall notice that the liquid, which remains clear in pure air, becomes at once milky, showing the presence of an invisible gaseous body produced by the burning of the candle, which possesses properties different from those of pure air. Although an apparent loss of matter occurs when a candle burns, it is easy to show by a simple experiment not only that this is not the case, but that, on the contrary, an increase of weight has occurred; this increase is occasioned by the constituent parts of the tallow or wax having united chemically with an invisible gas (called oxygen) present in the air. By the careful examination of all the known cases of chemical action it has been satisfactorily proved that a *loss* of matter never takes place, that *matter is indestructible*, and that in chemical actions such as that going on in the burning of the candle a change of state and not an annihilation of matter occurs. The truth of this first great principle in chemical science has been gradually demonstrated by finding that the weight of the substances acting chemically upon one another always remains the same after as before the chemical changes have occurred.

LES.

**Matter, The Circulation of.**—Few things appear more incomprehensible than the production and reabsorption of matter. An animal falls to the ground and dies; myriads of creatures are now summoned by a call, by an impulse of which we have no perception, to remove it, and prepare it for a new combination; chemical agencies, fermentation and solution, immediately commence their actions to separate the parts; and in a short time, of all this great body nothing remains but the framework or bones, perhaps a little hair or some wool; all the rest is departed we know not whither. Worms and insects have done their parts; the earth has received a portion; and the rest,

converted into gases and exhalable matters, has dispersed all over the region, which, received into vegetable circulation, is again separated and changed, becomes modified anew, and nourishes that which is to continue the future generations of life. The petal of the rose, the pulp of the peach, the azure and the gold on the wing of the insect, all the various productions of the animal and vegetable world, the very salts and compounds of the soil, are but the changes some other matters have undergone which have circulated through innumerable channels since the first production of all things, and no particle been lost.

J.

**Matter, The Transmigrations of.**—The mountain rock, exposed to the disintegrating effects of the weather, loses that peculiar chemical or cohesive life which keeps it from changing or decaying, and crumbles into dust, in which state it is borne down by the storm on the stream to the plain. The soil thus formed is taken up by the roots of plants, and eliminated into the various parts of their structure. These plants die, and form by their decomposing remains a rich and fertile mold. Down into this stratum of decay and death the grass strikes its roots, and forms the support of those animals which man rears exclusively for food. The particles thus organized become endowed with the highest vitality, and are associated with the immortal spirit in the closest and most intimate relationship, so that what is now bone of our bone and flesh of our flesh may have once formed part of a granite rock protruding far up among the clouds on some distant mountain peak.

B.

**Matter, The Extreme Divisibility of.**—Divisibility is the property in virtue of which a body may be divided into distinct parts: and very wonderful are its results. Numerous examples may be cited of the extreme divisibility of matter. The tenth part of a grain of musk will continue for years to fill a room with its odoriferous particles, and at the end of that time will scarcely be diminished in weight. Blood is composed of red flattened globules floating in a colorless liquid called serum. In man the diameter of one of these globules is less than the

thirty-five-hundredth part of an inch, and the drop of blood which might be suspended from the point of a needle would contain about a million of globules. Again, the microscope has disclosed to us the existence of insects smaller even than these particles of blood; the struggle for existence reaches even to these little creatures, for they devour still smaller ones. If blood runs in the veins of these devoured ones, how infinitesimal must be the magnitude of its component globules ! EL.

**Meddlers, A Caution to Domestic.**—Some people do not understand how to coöperate for public ends without interfering with the privacy of domestic life. The seals teach a good lesson in this respect. They can work together at proper times; but they honor the sanctity of home. They live sociably, and in great numbers frequent the same localities. Although in the sea these animals coöperate in numerous herds, and protect and valiantly defend each other, once emerged from their favorite element they regard themselves on their peculiar rock as in a sacred domicile, where no comrade has a right to intrude upon their domestic tranquillity. If one of them approach this family center, the chief—or, shall we say, the father?—prepares to expel by force what he considers a foreign aggression; and there invariably takes place a terrible combat, which only ends in the death of the lord of the rock, or in the compulsory retreat of the indiscreet stranger. ¶ This proceeding is well worth the attention of every busybody. It is full of sense, and shows a discrimination between public coöperation for the common good, and officious interference in private life, which would do credit to even human beings. MY.

**Meddlers, A Hint to.**—If a bee-master is to succeed, he must be very careful not to meddle much with his bees. Bees, like most other corporate bodies, have a great horror of interference from outside, and always like to work their own reforms without the assistance of commissions from other quarters, and think that their own sovereign is quite capable of governing them without seeking the help of other powers. To meddle unnecessarily with them is to prevent their proper working.

B. W.

**Memory's Mode of Appropriation.**—Understanding is not essential to memory; the memory of many things not understood may be vital within us. For the fact is that memory often grips and appropriates quite mechanically. The magpie appropriates the silver spoon, carries off the gold pencil, and numbers of other articles, without knowing what they are or what to do with them, and stores them carefully away. Like the magpie, the memory is a kleptomaniac. It cannot restrain itself from snatching at and stealing away all sorts of things. Hence the importance of keeping away from thoughts and scenes which it is undesirable for memory to accumulate. The magpie does not turn his medley of stores to much account. The memory does. It is constantly meddling with them, and they are all turned to either a good or evil purpose. And they endure forever.

G. S.

**Mental Lights.**—Aldebaran was once the grandest star of the firmament, and Sirius had a companion-star once the brightest in heaven, and now one of the feeblest. Because they are now dim to us, are we to conclude that they are going out and becoming naught? The stars, says Mr. E. S. Dallas, are overhead, though in the blaze of day they are unseen; they are not only overhead, but also all their influences are unchanged. So there is knowledge active within us of which we see nothing, know nothing, think nothing. Thus in the sequence of thought, the mind, busied with the first link in a chain of ideas, may dart to the third or the fourth, the intermediate links being utterly unknown to it. But they are there, and there in force.

G. S.

**Mental Fertilizers of Society, The.**—Mountains act as lodestones to the clouds, and draw down from them the fertilizing rain. A mountain range often determines whether a country is to be a garden or a desert, and points out the place where the rain-bearing winds are to yield up their treasures. Mountains drink the waters of the rain of heaven. They are the great watersheds of the earth. On their tops the river systems of the world are born, and the tiny rills thence first started on their way soon coalesce into streams, and then into rivers, to be

poured back eventually into the sea. They are the dispensers of fertility. In the world of mind there are souls which rise above the common plains of human thought as those mountains ascend above the levels of the land. They tower upward into the heavens of genius. They commune with truth. They send down its refreshing influences to the arid wastes of commonplace, and make the intellectual desert blossom like the rose. They are the mental fertilizers of society. # BE.

**Mercenary Spirit, The.**—The mercenary spirit among men is like the heron among the birds. Now look at the heron and you will see the resemblance at once. Of all other birds he commits the greatest devastation in fresh waters; and there is scarcely a fish, though never so large, that he will not strike at and wound, though unable to carry it away. But the smaller fry are his chief subsistence; these, pursued by their larger fellows of the deep, are obliged to take refuge in shallow waters, where they find the heron a still more formidable enemy. # His method is to wade as far as he can into the water, and there patiently wait the approach of his prey, which when it comes within sight, he darts upon with inevitable aim. In this manner he is found to destroy more in a week than an otter in three months. In general he is seen taking his gloomy stand by the lakeside, as if meditating mischief, motionless, and gorged with plunder. But though in seasons of fine weather the heron can always find a plentiful supply, in cold or stormy seasons his prey is no longer within reach, and the heron is obliged to support himself upon his long habits of patience, and even to take up the weeds that grow upon the water. At those times he contracts a consumptive disposition, which succeeding plenty is not able to remove. Hence, notwithstanding the care with which he takes his prey and the amazing quantity he devours, the heron is always lean and emaciated. And though his crop be usually found full, yet his flesh is scarcely sufficient to cover the bones. Thus he is like the man of mercenary spirit. The mercenary man is active, daring, diligent, patient, cruel, and voracious, and he, also, is unhappy. He wants more than is

good for him, and consumes more than he can turn to useful account. If he gains the whole world, he is lean and hungry still. He works for flesh, obtains it, and yet is skeletal and solitary. When a number of these, in the form of Israelites, craved for flesh, Heaven gave it them, but even then leanness was sent into their souls.

A.

**Metamorphosis a Law.**—A most curious and most important field of microscopic inquiry has been opened up in the study of the transformations which a large proportion of the lower animals undergo during the early stages of their existence; and notwithstanding that it has even yet been very imperfectly cultivated, the unexpected result has been already attained, that the fact of "metamorphosis," previously known only in the cases of insects and tadpoles, and commonly considered as an altogether exceptional phenomenon, is almost universal among the inferior tribes; it being a rare occurrence for the offspring to come forth from the egg in a condition bearing any resemblance to that which characterizes the adult, and the latter being in general attained only after a long series of transformations in the course of which many curious changes are presented. There is no monotony in Nature. "Pass on," is ever the command.

MI.

**Mien is Independent of Occupation.**—There is a very large tribe of beetles of which the British type is the common dor-beetle. Its color is wondrously beautiful, and its polished surface gleams as if made of burnished steel, pure and bright as armor just out of the smith's hands. Yet this creature has been burrowing deeply into the ground, has been meddling with the most noxious substances, and still retains no trace of its past labors. Not a speck of mold remains upon its surface, not a stain defiles its limbs, neither does it retain the least odor which would betray its occupation. It serves to remind us that a man's mien need not be repulsive merely by reason of the fact that his occupation is offensive. He has within himself a power to make his individuality superior to his surroundings. His demeanor and his character may both be beautiful even

though he has to do rough work. Indeed we have known quarrymen, colliers, and iron-workers who in point of manners and culture would compare most favorably with men in cities who had never done anything but clean-looking work. Real manhood always stands out in attractive forms whatever may be its honest occupation. The beetle turns unpleasant substances into a beautiful appearance, and man creates a brilliant character out of harsh elements. H.

**Mind, The Supremacy of.**—From a general study of four-handed animals, we perceive what few advantages the brute creation derive from those organs that in man are employed to so many great and useful purposes. The being able to pluck their food from the trees, the capacity of clinging among the branches, and at most of converting one of those branches into a weapon of defense, are the highest stretches of their sagacity, and the only use their hands have hitherto been employed in; and yet some superficial men have asserted that the hands alone are sufficient to vindicate the dominion of mankind over other animals, and that much of his boasted reason is nothing more than the result of his happier conformation. However, were this so, an ape or a monkey would in some instances be more rational than we; their fingers are smaller, and in some of them more finely formed than ours. To what a variety of purposes might they not be employed if their powers were properly exerted? Those works which we, from the largeness of our fingers, are obliged to go clumsily about, one of these could very easily perform with the utmost exactness; and if the fineness of the hand assisted reason, an ape would be one of the most reasonable beings in the creation. But these admirably formed machines are almost useless both to mankind and themselves, and contribute little more to the happiness of animal life than the paws of the lowest quadruped. They are supplied indeed with the organs, but they want the mind to put them into action: it is that reasoning principle alone, with which man has been endowed, that can adopt seemingly opposite causes to concur in the same general design, and even



where the organs are deficient, that can supply their place by the intervention of assisting instruments. Where reason prevails, we find that it scarcely matters what the organs are that give it direction; the being furnished with that principle still goes forward, steadily and uniformly successful, breaks through every obstacle, and becomes master of every enterprise. We have seen a man without hands or legs convert by practice his very stumps to the most convenient purposes, and with these clumsy instruments perform the most astonishing feats of dexterity. We may therefore conclude that it is the mind alone that gives a master to the creation; and that if a bear or a horse were endowed with the same intellects that have been given to a man, the hardness of a hoof, or the awkwardness of a paw, would be no obstacle to their advancement in the arts of dominion or of social felicity.

A.

**Mind the Seat of Sensations.**—So indissoluble is the connection of sensation with some distant spot on the surface, that after an arm or a leg has been amputated the patient constantly feels sensation in the lost fingers and toes. In vain, says Mr. G. H. Lewes, experience contradicts the sensation; in vain he sees that his fingers and toes are not there to feel; he feels them as distinctly as ever he felt them when they were parts of his living body. Nay, so urgent is this conviction at times, that men have actually had the feet cut off because of the pain felt there; and the pain still continuing after the feet were removed, they have had the leg removed from the knee; this not succeeding, they have had the hip-joint removed. Here the seat of injury was not in the foot, but the sensation was *referred* to the foot. Long after we have learned to refer all sensations to the surface we have but an indistinct conception of the exact spot on that surface where the impression is made; and throughout life we are totally unable to refer with any accuracy to the particular portions of the viscera, back, neck, and legs, which are affected, whereas the hands, feet, tongue, and face admit of marvelous nicety in this respect.

PH.

**Mind, The Function of.**—Lakes receive water from vari-

ous sources, and some of the rivers which enter them are turbid and muddy. Yet the water which flows out from a lake is limpid and clear as crystal. The reason of this is that the lake precipitates all the sand and mud, and settles it down in depositions of silt. Only water which is bright and pure is sent forth.† Now the human mind resembles the lake in that the information which it receives comes to it, like streams, from all sorts of sources, pure and impure. Like the lake, it can arrest the further circulation of whatever is bad and base. It can filter everything which passes through it. It can insist that any stream of influence which issues from it shall be pure and good, and free from all that is of the earth, earthy. AD.

**Mind Requires a Healthy Atmosphere, The Vigorous.**

—A weak enervated mind may live in a sickly atmosphere of cant or artificiality, which would be incompatible with the life of a healthy mind. In this case, weakness and enervation, paradoxical as it appears, are able to endure more than strength and vigor. A sparrow left in a bell-glass, to breathe over and over again the same air, will live in it for upward of three hours; but at the close of the second hour, when there is consequently still air of sufficient purity to permit this sparrow's breathing it for more than an hour longer, if a fresh and vigorous sparrow be introduced, such an one will expire almost immediately. The air which would suffice for the respiration of the one sparrow suffocates another.† Nay more, if the sparrow be taken from the glass at the close of the third hour when very feeble, be restored to activity and to sufficient vigor to fly about again, and then once more in its now healthy state introduced into the atmosphere from which it was taken, it will perish immediately. The poisonous action of a vitiated air is better resisted by the feeble sickly organism than by the vigorous healthy organism. PH.

**Mind in an Atom, A.**—The mind does not demand a vast theater as the scene of its operations. Its essential glory is not bound up with vast mechanical movements, but is revealed by the quality of acts. What is more interesting than an examina-

tion, by means of a first-rate microscope, of a tiny atom that inhabits almost every clear ditch—the *Melicerta*? The smallest point which you could make with the finest steel pen would be too coarse and large to represent its natural dimensions; yet it inhabits a snug little house of its own construction, which it has built up stone by stone, cementing each with perfect symmetry, and with all the skill of an accomplished mason, as it proceeded. It collects the material for its mortar, and mingles it; it collects the material for its bricks, and molds them; and this with precision only equaled by the skill with which it lays them when they are made. As might be supposed with such duties to perform, the little animal is furnished with an apparatus quite unique, a set of machinery to which, if we searched through the whole range of beasts, birds, reptiles, and fishes, and then by way of supplement examined the five hundred thousand species of insects to boot, we should find no parallel. The whole apparatus is exquisitely beautiful. The head of the pellucid and colorless animal unfolds into a broad transparent disk, the edge of which is molded into four rounded segments, not unlike the flower of the heart's-ease, supposing the fifth petal to be obsolete. The entire margin of this flowerlike disk is set with fine vibratile cilia: the current produced runs uniformly in one direction. Thus there is a strong and rapid set of water round the edge of the disk, following all its irregularities of outline, and carrying with it the floating particles of matter, which are drawn into the stream. At every circumvolution of this current, however, as its particles arrive in succession at one particular point, viz., the great depression between the two uppermost petals, a portion of these escape from the revolving direction, and pass off in a line along the summit of the face toward the front, till they merge in a curious little cup-shaped cavity seated on what we may call the chin. This tiny cup is the mold in which the bricks are made one by one as they are wanted for use. The hemispherical interior is ciliated, and hence the contents are maintained in rapid rotation. These contents are the atoms of sedimentary and similar matter which

have been gradually accumulated in the progress of the ciliary current; and these, by the rotation within the cup becoming consolidated, probably also with the aid of a viscid secretion elaborated for the purpose, form a globular pellet, which as soon as made is deposited, by a sudden inflection of the animal, on the edge of the tube or case at the exact spot where it is wanted. The entire process of making and depositing a pellet occupies about three minutes. We say nothing about the other systems of organs contained in this living atom—the arrangements destined to subserve the purposes of digestion, circulation, respiration, reproduction, locomotion, sensation, etc., though these are all more or less clearly distinguishable in the tissues of the animal, which is as translucent as glass. “For the moment,” says Mr. Gosse, “I ask attention only to the elaborate conformation of organs which I have briefly described, for the special purpose of building a dwelling. No description that I could draw up, however, could convey any idea approaching to that which would be evoked by one good sight of the little creature actually at work—a most charming spectacle, and one which, from the commonness of the animal, and the ready performance of its functions under the microscope, is very easy to be attained.” It is impossible to witness the constructive operations of the *Melicerta* without being convinced that it possesses mental faculties, at least if we allow these to any animals below man. If when the chimpanzee weaves together the branches of a tree to make himself a bed; when the beaver, in concert with his fellows, gnaws down the birch saplings, and collects clay to form a dam; when the martin brings together pellets of mud, and arranges them under our eaves into a hollow receptacle for her eggs and young—we do not hesitate to recognize mind—call it instinct, or reason, or a combination of both—how can we fail to see that in the operations of the invisible animalcule there are the workings of an immaterial principle? There must be a power to judge of the condition of its case, of the height to which it must be carried, of the time when this must be done; a will to commence and to go on, a will to leave

off (for the ciliary current is entirely under control); a consciousness of the readiness of the pellet; an accurate estimate of the spot where it needs to be deposited (may I not say also, a memory where the previous ones had been laid, since the deposition does not go on in regular succession, but now and then, yet so as to keep the edge tolerably uniform in height?), and a will to determine that there it shall be put. But surely these are mental powers—yet mind animating an atom so small that your eyes strained to the utmost can only just discern the speck in the most favorable circumstances, as when you hold the glass which contains it between your eye and the light, so that the ray shall illuminate the tiny form while the background is dark behind it!

RO.

**Minute, The Mighty in the.**—The circulation of the ocean, its phosphorescence, and the coloration of certain seas, make known but imperfectly what can be accomplished by the incalculable numbers, the prodigious fecundity, and the devouring activity of the minute animals, scarcely perceptible individually, and of so elementary an organization, with which it teems. Yet geology demonstrates that it was they which laid the foundation of animal life in that immense cradle, that inexhaustible nursery (as Maury calls it); it is they which maintain a never-varying identity in the composition of its waters, absorbing and elaborating the mineral and organic properties with which these are incessantly loaded. There are some which serve as the food of stronger and superior species, the mollusks and the radiates; these in their turn nourish the fish and crustaceans, which are themselves devoured, either by far larger fishes or by the cetaceans and amphibians. There are others—indefatigable architects—which construct the fantastic edifices that from the depths of ocean mount to its very surface, and spread afar, ramify, and terminate in coral reef and islands. Others, finally, by dying, have accumulated at certain points their silicious or calcareous wrecks, and formed numerous banks and shallows, and entire beds of deposit, where the geologist to-day may study these first-born of creation.

MY.

**Minute, The Vast in the.**—We discourse about *the little* and *the great*; but these are relative terms. A thing which we may call *little* a philosopher may declare contains in itself the basis of all life and the germ of worlds. Take, for instance, such an insignificant thing as the stinging-nettle which you are about to tread beneath your feet. Professor Huxley will speak with you about that nettle in a manner which will invest it with astonishing interest forevermore. He commences by telling you that that common nettle owes its stinging property to the innumerable stiff and needlelike though exquisitely delicate hairs which cover its surface; that each stinging-needle tapers from a broad base to a slender summit, which, though rounded at the end, is of such microscopic fineness that it readily penetrates and breaks off in the skin. The whole hair, he says, consists of a very delicate outer case of wood, closely applied to the inner surface of which is a layer of semi-fluid matter, full of innumerable granules of extreme minuteness. This semi-fluid is protoplasm (the physical basis of life), which thus constitutes a kind of bag full of a limpid liquid, and roughly corresponding in form with the interior of the hair which it fills. When viewed with a sufficiently high magnifying power, the protoplasmic layer of the nettle-hair is seen to be in a condition of unceasing activity. Local contractions of the whole thickness of its substance pass slowly and gradually from point to point, and give rise to the appearance of progressive waves, just as the bending of successive stalks of corn by a breeze produces the apparent billows of a corn-field. But in addition to these movements, and independently of them, the granules are driven in relatively rapid streams through channels in the protoplasm which seem to have a considerable amount of persistence. Most commonly the currents in adjacent parts of the protoplasm take similar directions, and thus there is a general stream up one side of the hair and down the other. But this does not prevent the existence of partial currents which take different routes; and sometimes trains of granules may be seen coursing swiftly in opposite directions, within a twenty-thou-

sandth of an inch of one another; while, occasionally, opposite streams come into direct collision, and after a longer or shorter struggle one predominates. The spectacle afforded by the wonderful energies prisoned within the compass of the microscopic hair of a plant, which we commonly regard as a merely passive organism, is not easily forgotten by one who has watched its display, continued hour after hour, without pause or sign of weakening. Currents similar to those of the hairs of the nettle have been observed in a great multitude of very different plants, and weighty authorities have suggested that they probably occur in more or less perfection in all young vegetable cells. If such be the case, the wonderful noonday silence of a tropical forest is, after all, due only to the dullness of our hearing; and could our ears catch the murmur of these tiny maelstroms as they whirl in the innumerable myriads of living cells which constitute each tree, we should be stunned as with the roar of a great city.

L. S.

**Mistaken Identity.**—The yellow gum-tree of Western Australia has been compared to a tall native black man with a spear, and to those who have seen it the resemblance is complete. The author of "*Gatherings of a Naturalist in Australia*" says that he has even seen a fellow-traveler "cooing" to one of these trees to make an inquiry. For this reason the trees are often called "Blackboys." There have been in England cases of mistaken identity quite as amusing. For instance, there has sometimes been observed in a court of law a man dressed up in all the habiliments of a judge, and sitting as a judge would be expected to sit. Counsel has been heard professionally "cooing" to him, yet all the time the gentleman has been only a jester, or an advocate, and no more a judge than the yellow gum-tree was a black boy. The great Tichborne trial was a good illustration of this kind of thing. The position in which a tree or a man is placed, and outside appearances, often conspire to produce an hallucination.

G.

**Moral Relapse.**—The pansy only develops its beauty under cultivation, and when neglected soon relapses into its native

condition. There are men who keep conspicuously moral so long as they are constantly cultivated by their minister, but who relapse into their former littleness if his care is withdrawn. Such men, like the pansies, give a deal of trouble. But if you want to exhibit either them or the flower, you have no option but to give them constant cultivation. Whether the result, in either case, is worth the trouble is another matter. B. F.

**Moral Sentinels.**—The *Trigonocephalus*, or lance-headed viper, is a most poisonous reptile, common in the West Indian Islands. To warn the natives in the Antilles of his presence, Nature has supplied us with numerous watchful sentinels in the small birds, whose not unreasonable hate against this serpent is a remarkable proof of their intelligence. No sooner does the bird, which they have wished to name the nightingale, see from his aerial station the scales of the reptile gliding into the herbage, or glittering among the large leaves, than he can no longer control himself. He flies to and fro; he leaps from branch to branch, summoning with a lamentable cry all the feathered tribe from the neighboring trees. From far and near the cry widens and is repeated; from all directions flock nightingales and thrushes, grosbeaks and humming-birds, and hovering above the assassin furiously denounce it, and indicate its lurking-place to man. Irritated by such a concert of maledictions, the serpent elevates its crest, but lo! they are far beyond its reach! And the cries, the murmurs, the insults are redoubled. It seeks to conceal itself, but these cries persistently accompany it. Wherever it drags its slimy, shining bulk, they follow, they harass, and they denounce it. Either night comes on, or it succeeds in completely hiding itself from their watchful gaze, before they reluctantly leave it to its own devices. Great the consternation if their enemy escape them. But what joy, what triumphal sounds, if man appears upon the scene, and slays it! These birds resemble those moral sentinels in society, the preachers, the teachers, and the philanthropists, who endeavor by their activities and their voices to warn mankind against the insidious movements of “that old serpent the devil.” How en-



ergetically do these good men perform their noble work ; how wary and indefatigable are they in their labors ; and how exultant are they if they can save men from being made victims !

D.

**Moral Ascendancy, The Advent of.**—Contemplate our planet as it must have been when inhabited by the monstrous birds, and reptiles, and quadrupeds which preceded the advent of man. Those were times when animated forms attained dimensions which are now wholly exceptionable. That may be described as the age when physical and physiological forces were dominant, as the force of moral agency dominates over the present, and is destined, as appearances tend to prove, to dominate more fully hereafter. Can we not recognize an antagonism between the development of brute force and of the quality of mind ? Would it not even seem that Nature could not at one and the same time develop mental and corporeal giants ? The physiological reign has only declined in order to prepare the advent of moral ascendancy. Giant bodies seem departing from the earth, and giant spirits commencing to rule. Humanity is progressive : is not this progression made manifest by zoölogical revelations ? The first bone-traces of human beings range back to an epoch posterior to the monstrous quadrupeds entombed in the diluvium. Hereafter giants probably will only be seen in the moral world, grosser corporeal giant forms having become extinct.

S. N.

**Moral Truths, The Inextinguishableness of.**—Nothing can be more singular than the manner in which plants spring up on certain occasions. Thus after the great fire of London in 1666, a large portion of the devastated city was in a short time covered with a luxuriant crop of the *Sisymbrium Irio*, in such profusion that it was calculated that the whole of the rest of Europe did not contain so many specimens of this plant. Again, wherever a salt-spring breaks out at a distance from the sea, its vicinity immediately abounds with salt-plants, although none grew there before. When lakes are drained, a new vegetation springs up. Thus when some of those of the Danish

island of Seeland were drained, Vilny observed *Carex cyparoides* springing up, although that species is naturally not a native of Denmark, but of the north of Germany. M'Kenzie, in his North American tour, speaking of the country bordering on the Slave Lake, says: "It is covered with large trees of spruce-pine and white birch; when these are destroyed poplars succeed, though none were before to be seen." Evelyn notices a fact very similar to this, which is observed in England, in Nova Scotia, and in the United States, that where fires have destroyed the original wood the new saplings which spring up are generally different species of trees. All these phenomena indicate the inextinguishableness of vegetable vitality; and on this point they may be employed to typify the inextinguishableness of moral truths in our world. No fires of insurrection, no deluges of persecution, no changes in the forms of human society by kings, or priests, or mobs, have ever had the effect of obliterating moral ideas. They are inextinguishable, and spring up unaccountably in perennial beauty despite all social conflagrations and convulsions. s.

**Morality Affected by Weather.**—We are played upon by external influences. Vice may be developed by the breezes. Atmospheric changes may affect even the human mind. For example: the police of Buenos Ayres are well acquainted with the fact that quarreling and bloodshed are much more frequent when the wind blows from the north.† Sir Woodbine Parish informs us, in his narrative of a visit to that place, that a sort of moral derangement prevails while that wind continues. This wind produces headache and disorder of faculty to a great extent, and, of course, leads to increase of crime with all classes of persons who are accustomed readily to yield to their bodily impulses. No doubt the cause as regards Buenos Ayres arises from some *malaria* engendered in the marshes over which the wind passes. That the cause is chemical is proved by its effects on meat, which soon becomes putrid when exposed to it. The milk also is quickly spoiled, and the bread baked during its continuance is always bad. u.

**Morality, The Relation of Food to.**—The eating by man of bad food, or of good food which is badly assimilated, will account for much of the misery and many of the crimes of the world. Some of the barbarous theology of mankind may be traced to indigestion. The want of food has often supplied the motive for wars and riots. That fasting, even when under the supposed authority of religion, kindles the murderous passions in those who are not habituated to self-control and the devotedness of holy motives, is largely exemplified by the information of those who have traveled in superstitious countries. Thus the author of "Eöthen," who is evidently well informed, states that the fasts of the Greek Church produce an ill effect upon the character of the people, for they are carried to such an extent as to bring on febrile irritation with depression of spirits, and a fierce desire for the perpetration of dark crimes. Hence the number of murders is greater during Lent than at any other time of the year. U.

**Multum in Parvo.**—When we look on the tiny harvest-mouse, two of which scarcely weigh a quarter of a dollar, and which brings up its large little family of eight hopeful mouselings in a nest no bigger than a cricket-ball, or the still tinier Etruscan shrew, it greatly enhances our interest to know that every essential organ is there which is in the giant rorqual of a hundred feet. The humming-bird is constructed exactly on the same model as to essentials as the condor; the little sphærodactyle, which we might put in a quill-barrel and carry home in the waistcoat-pocket, as the mighty crocodile; the mackerel-midge, which never surpasses an inch and a quarter in length, as the huge basking shark of six and thirty feet. RO.

**Murderous though Beautiful.**—Beautiful, innocent-looking creatures are sometimes deadly in their influence. The *Lucilia hominivorax* is rather more than the third of an inch in length; the head is large, downy, and of a golden yellow. The thorax is dark blue and very brilliant, with gay reflections of purple. The wings are transparent, yet prettily tinged; their margins as well as the feet are black. This innocent-looking

insect is very beautiful, yet it is an assassin. M. Coquerel has informed us that it sometimes occasions the death of those wretched convicts who have been transported to the distant penitentiary of Cayenne. When this fly gets into the mouth or nostrils it lays its eggs there, and when they are changed into larvæ, the death of the victim generally follows. The larvæ are lodged in the interior of the nasal orifices and the frontal sinuses, and their mouths are armed with two very sharp mandibles. They have been known to reach the ball of the eye, and to gangrene the eyelids. They enter the mouth, corrode and devour the gums and the entrance of the throat, so as to transform those parts into a mass of putrid flesh, a heap of corruption. What an emblem are these of the pleasures which, in an unsuspecting form, are apt to fasten themselves upon man—beautiful in appearance, yet ruinous in result ! I.

**Muscular System, Influence of Modulated Sound upon the.**—Travelers inform us that the Arabs are in the habit of teaching goats to stand with their feet close together on the top of several little blocks of wood. The manner in which they accomplish this feat beautifully illustrates the influence of modulated sound on the muscular system, as it appears that, however long the goats may have been used to this exhibition, they succeed only during the playing of a tune. If there be any alteration in the movement or time the goat begins instantly to totter, and the moment the music closes the goat falls. A similar effect is felt by dancers on the tight-rope. This resembles what is felt by vain statesmen when the music of flattery ceases. U.

**Music a Natural Inspiration.**—The song of the birds must be the expression of some sentiment ; they surely sing as much for their own pleasure as to charm those who listen to them. When they fill the woods with their melodious accents, they direct their looks on all sides, as if proud of their talents, and desirous of gathering the tribute of admiration to which they feel themselves entitled. Their song varies with the season ; but it is in the early spring their efforts are the most successful

and we are most disposed to admire the beauty and harmony of their voices. Can anything be more delicious than the warbling of the linnet, the piping of the goldfinch, slowly swelling from the leafy bower, or the melodious cadence of the nightingale as it breaks the silence of the woodland during the serene nights of leafy June ?

RE.

**Musical Taste, Caprices of.**—Mouflet relates that in certain regions of Africa the crickets (*Gryllus*) are objects of commerce. They are brought up in little cages, as we do canary-birds, and sold to the inhabitants, who like to hear their amorous chant. This song lulls them to sleep. It would be quite irritating to the ears of persons trained to more melodious sounds. But there is no absolute standard of music in the world. That which some persons consider melody others would deem discord. There are caprices of musical taste which enable people to enjoy the chirping of crickets and the piano and song of the conventional boarding-school young lady.

1.

**Mutual Cooperation.**—The animal inhabitant of the *Pinna marina* is a blind slug surrounded with numerous enemies, and particularly obnoxious to the *Sepia*, or cuttlefish, who watches the motion of the pinna, and no sooner does the latter open his bivalve shell, which occasionally exceeds two feet in length, than he rushes upon him like a lion. It will naturally be asked how such a blind, defenseless creature can either procure food or protect himself from the attack of his implacable enemies. A kind of crab-fish, naked like the hermit, and very quick-sighted, is the constant companion of the *Pinna marina*. They live and lodge together in the shell which belongs to the latter. When the pinna has occasion to eat, he opens his valves, and sends out his faithful purveyor to procure food. If any foe approaches, the watchful crab returns with the utmost speed and anxiety to his blind protector, who, being thus warned of danger, shuts his valves, and escapes the rage of the enemy; when, on the contrary, the crab loads himself with booty, he makes a gentle noise at the opening of the shell, which is closed during

his absence, and when admitted the two friends feast together on the fruits of his <sup>work.</sup> industry. PH.

**Mutual Attraction, The Principle of.**—The self-luminous stars which so thickly stud the heavens are probably but the centers of numberless other systems, for it is placed beyond dispute that there is no one mass of matter positively isolated, but that all are alike influenced by extraneous bodies, subject to the same unerring law. This law pervades the universe, and is the principle of mutual attraction, by which these floating worlds, acting and reacting on each other, are buoyed up forever in the aërial ocean of space. MAR.

**Mystery, The Veil of.**—The veil of mystery hides from our gaze, not only our own future, but our very origin. It envelops the whole problem of life. If we trace animal and physical nature to their beginnings, we come to the borders of a kingdom shrouded in mystery. We meet in the *Protista* forms of organic life whose characteristics are so indefinite as to make it impossible for us to decide whether they are vegetables or animals; they are organisms without organs. If we try to lift the veil of mystery from protoplasm, we can discover nothing more than that it is a naked contractile mass of seemingly homogeneous jelly, the substratum for all the life-movements of the lowest living things. No one can detect any rigid line which separates what we call life from that which we suppose to have no life. The veil of mystery prevents our finding any absolute barrier between the living and the not living. We know nothing of an absolute commencement of life. The veil of mystery hides all the primordial collocations. However much we may wish it, we cannot be present at the genesis of life; the veil is still there. The gradual transition from the not living to the living is ever hidden from our view by its mysterious folds. B. L.

**Name Adheres, Though Undeserved, a Bad.**—Give a man a bad name, and no one credits him with the many good things he does. Give an animal a bad name, and people omit to notice whether it be appropriate and just. The ass is al-

ways esteemed as the stupidest of animals, yet if one be shut up in the same inclosure with half a dozen horses of the finest blood, and they ~~partly~~ escape, it is infallibly the poor donkey that has led the way. It is he alone that penetrates the secret of the bolt and latch, and he may be often seen snuffing over a piece of work to which all other animals are incompetent. P.

**Nastiness its own Defense.**—The skunk, being slow of motion, can be easily overtaken and captured; but neither man nor dogs care to go near it. It is comparatively safe from them by reason of the filthy and noisome stench which it has the power to discharge at pleasure, a stench which is supposed to be one of the most powerful in Nature, and so durable that it will remain for days. It is so horrible as in some cases to produce actual illness. And the creature has the power to eject the irritant fluid which contains it to a distance upward of five feet. We have seen men and women in society who have deserved punishment for their offenses, but who have nevertheless remained safe because, like the skunk, they were too nasty to attack. The ordinary rules for the pursuit and chastisement of wrong-doers did not apply to their case. Had they been cleaner natures they might have been castigated according to their deserts. Constituted as they were, even the dogs of the law refused to follow their loathsome track, and all pure men stood aloof from the work. Of such beings we may say that they have been exceptionally safe because they were exceptionally pestiferous.

MU.

**Nasty, The Conquests of the.**—The burrowing owl, which flies by day, derives its name from the place where it makes its nest in the pampas of South America, or the prairies of North America. It does not dig burrows for itself, but simply takes possession of those belonging to other animals after having driven them away by its disgusting odor. This is its mode of conquering a territory. There are some men who seem to push their way in life by the power which they possess of making themselves objectionable. They do not enjoy sufficient genius to command influential positions, yet they acquire them; and

their compeers make way for them. It is because of their insufferable offensiveness. The persons around them cannot work with them or near them; they resign, and the burrowing-owl man obtains the place he wants. He is keen enough to know the situation which he does want, and he makes for it. He does not need to do any struggling or fighting. There is that in him which drives others away and leaves him master. RE.

**Natural Selection.**—Natural selection, or the survival of the fittest, does not necessarily include progressive development; it only takes advantage of such variations as arise and are beneficial to each creature under its complex relations of life. And it may be asked, What advantage, so far as we can see, would it be to an infusorian animalcule, to an intestinal worm, or even to an earthworm, to be highly organized? If it were no advantage, these forms would be left by natural selection unimproved or but little improved, and might remain for indefinite ages in their present little-advanced condition. O.

**Nature's Plans, The Completeness of.**—Philosophy teaches us when the little snowdrop, which in garden walks is seen raising its beautiful head to remind us that spring is at hand, was created, that the whole mass of the earth, from pole to pole, and from circumference to center, must have been taken into account and weighed in order that the proper degree of strength might be given to the fibers of even this little plant. Botanists tell us that the constitution of this plant is such as to require that, at a certain stage of its growth, the stalk should bend and the flower should bow its head, that an operation may take place which is necessary in order that the herb should produce seed after its kind; and that after this, its vegetable health requires that it should lift its head again and stand erect. Now if the mass of the earth had been greater or less, the force of gravity would have been different; in that case the strength of fiber in the snowdrop, as it is, would have been too much or too little; the plant could not bow or raise its head at the right time, fecundation could not take place, and its family would have become extinct with the first individual that was



planted, because its "seed" would not have been "in itself," and therefore it could not reproduce itself. T.

**Nature Affords Assistance, The Plan on which.**—There are two ways in which Nature affords aid: one is by directly doing the particular thing required; the other is by giving a creature the power to perform it himself. And as a rule Nature refuses to do for a creature that which she has endowed him with power to do for himself. In the Arctic regions, where the cold of winter is intense, Nature has furnished most animals with an efficient protection against its influence. She has given its warm coat of fur to the bear, and has provided the whale and walrus with a stratum of blubber, whose non-conducting powers enable the animals to retain their vital warmth in a medium which would seem to be inconsistent with life. All animals, except man, in fact, are provided with more or less covering to enable them to resist cold, and accordingly we find that where they are naturally the inhabitants of countries exposed to considerable varieties of temperature, they appear to suffer very little inconvenience during the winter. Not so man; unprovided with any natural covering to shelter him from the chilling influence of a wintry atmosphere, <sup>man</sup> he must have become to a certain extent a hybernating animal, had not his reason and his industry supplied him with clothing and fire to protect him from cold. Nature for this purpose was content with bestowing on him the compensating faculty of reason, leaving the rest to his own ingenuity and diligence. s.

**Nature's Marvelous Prevision.**—When a coral reef, says Chamisso, is of such a height as to be almost wholly uncovered at low water, the zoöphytes discontinue their toils. Below the line which they have traced you then discover a continuous stony mass, composed of shells, mollusks, and *Echinidae*, with their bristling spikes and fragments of coral connected by a calcareous sand proceeding from the pulverization of the shells. It often happens that the heat of the sun penetrates this calcareous mass when it is dry, and causes it to split open in many places; the waves then possess sufficient force to divide it into

blocks of coral about six feet long by three or four and a half feet broad, and to hurl them upon the reef; this operation terminates in the elevation of such a crest that the high tides only wash over it at certain periods of the year. The calcareous sand does not experience any further change, and offers to the seeds brought thither by the waves a soil wherein vegetation flourishes with sufficient rapidity to speedily overshadow its dazzling white surface. Whole trunks of trees, transported by the rivers from other countries and other islands, find there at length, after a protracted voyage, a resting-place. Some small animals, such as insects or lizards, are conveyed among them, and usually become the first inhabitants of these reefs. Even before the trees are thick and leafy enough to form a wood, the sea-birds build their nests among them; stray terrestrial birds seek refuge in the copses; and finally, long after the polyps have accomplished their work, man appears and erects his hut on the fertile soil.

MY.

**Nature is a Book.**—Nature is a book, and a most profound and splendid book. Those who will read it will be completely fascinated and wisely taught. To one who looks abroad to contemplate the agents of Nature as he sees them at work upon our planet, no expression uttered nor act performed by them is without meaning. By such a one the wind and rain, the vapor and the cloud, the tide, the current, the saltness and depth, and warmth and color of the sea, the shade of the sky, the temperature of the air, the tint and shape of the clouds, the height of the tree on the shore, the size of its leaves, the brilliancy of its flowers—each and all may be regarded as the exponent of certain physical combinations, and therefore as the expression in which Nature chooses to announce her own doings, or, if we please, as the language in which she writes down or chooses to make known her own laws. To understand that language and to interpret aright those laws is at once delightful and profitable. No fact gathered in such a field as this can, therefore, come amiss to those who tread the walks of inductive philosophy, for in the handbook of Nature every such fact is a syllable; and

it is by patiently collecting fact after fact, and by joining syllable after syllable, that we may finally seek to read aright from the great volume which the mariner at sea and the philosopher on the mountain see spread out before them. T.

**Nature, Purity of Vesture a Principle in.**—Purity of vesture seems to be a principal precept of Nature, and observable throughout creation. Fishes, from the nature of the element in which they reside, can contract but little impurity. Birds are unceasingly attentive to neatness and lustration of their plûmage. All the slug race, though covered with slimy matter calculated to collect extraneous things, and reptiles, are perfectly free from soil. The fur and hair of beasts in a state of liberty and health are never filthy or sullied with dirt. Some birds roll themselves in dust and occasionally cover themselves with mire; beasts have the same habit; but this is not from any liking or inclination for such things, but to free themselves from annoyances, or to prevent the bites of insects. The *Meloë* and some of the *Scarabæi*, upon first emerging from their winter's retreat, are commonly found with earth clinging to them; but the removal of this is one of the first operations of the creature; and all the beetle race, the chief occupation of which is crawling about the soil and such dirty employs, are, notwithstanding, remarkable for the glossiness of their covering and freedom from defilements of any kind. J.

**Nature, The Music of.**—Birds associate themselves with all sounds and voices, add their own poesy, their wild and simple rhythms. By analogy, by contrast, they augment and complete the grand effects of Nature. To the hoarse beating of the waves the sea-bird opposes his shrill strident notes; with the monotonous murmurings of the agitated trees the turtle-dove and a hundred birds blend a soft sad cadence; to the awakening of the fields, the gaiety of the country, the lark responds with his song, and bears aloft to heaven the joys of earth. Thus then everywhere, above the vast instrumental concert of Nature, above her deep sighs, above the sonorous waves which escape from the divine organ, a vocal music springs

and detaches itself—that of the bird almost always in vivid notes, which strike sharply on this solemn base with the ardent strokes of a bow.

T. B.

**Nature's Secrets, Man's Power to Elicit.**—By the aid of Brooke's invention the entire orography of the Atlantic has been mapped out with sufficient exactness. This most simple instrument has already rendered unappreciable services to science. The bed of the ocean has been explored to a depth of fourteen thousand and fifteen thousand feet; and specimens, perfectly intact, have been collected of the wreck of shells and zoöphytes with which it is carpeted.

MY.

**Nature's Method of Developing New Races.**—A breeder, says Lyell, finds that a new race of cattle, with short horns or without horns, may be formed in the course of several generations by choosing varieties having the most stunted horns as his stock from which to breed; so Nature, by altering in the course of ages the conditions of life, the geographical features of a country, the climate, the associated plants and animals, and consequently the food and enemies of a species and its mode of life, may be said by this means to select certain varieties best adapted for this new state of things. Such new races may often supplant the original type from which they may have diverged, although that type may have been perpetuated without modification for countless anterior ages in the same region, so long as it was in harmony with the surrounding conditions then prevailing.

S. L.

**Nature, The Laboratory of Organic.**—It is in plants that the true laboratory of organic Nature resides: carbon, hydrogen, ammonium, and water are the elements they work upon; and woody fiber, starch, gums, and sugars on the one hand, fibrin, albumin, caseum, and gluten on the other, are the products that present themselves as fundamental in either organic kingdom of Nature—products, however, which are formed in plants, and in plants only, and merely transferred by digestion to the bodies of animals. The vegetable world is the great originator and source of that pabulum which is necessary for the existence of

animals. Animals use the materials which are elaborated for them. They alter them by degrees; they destroy or decompose them; they bring them back toward the state of carbonic acid, water, azote, and ammonia, a state which admits of their ready restoration to the air. B. L.

**Nature is Upheld by Antagonisms.**—The great primary object which Nature intended to serve by the universal diffusion of the grass seems to be the protection of the soil. Were the soil freely exposed to heaven without any organic covering it would speedily pass away from the rocks on whose surface it is deposited. The floods would lay bare one district and encumber another with accumulated heaps; the sun would dry it up and deprive it of all its nourishing constituents; the winds would scatter it far and near, and fill the whole atmosphere with its blinding, choking clouds. It is impossible to imagine all the disastrous effects that would be produced over the whole earth were the disintegration of the elements not counteracted by the conservative force of vital growth, and the destructive powers of Nature not kept in check by the apparently insignificant but actually irresistible emerald scepter of the grass. The earth would soon be deprived of its vegetation and inhabitants, and become one vast desert catacomb, a gigantic lifeless cinder, revolving without aim or object round the sun. B.

**Nature's Police, Some of.**—So numerous are the "green-oak moths" that their progeny would shortly devastate a forest were they not subject to the attacks of another insect. This insect is a little fly, of a shape something resembling that of a large gnat, and which has, as far as we know, no English name. Its scientific title is *Empis*. There are several species of this useful fly, one attaining some size; but the one that claims our notice just at present is the little empis, scientifically *Empis tessellata*. He is a terrible fellow, this empis, quiet and insignificant in aspect, with a sober brown coat, thin and genteel legs, and just a modest little tuft on the top of his head. But sad is it for the gay and very green insect that flies within reach of this very estimable individual! The great hornet that comes

rushing by is not half so dangerous for all his sharp teeth and his terrible sting. The stag-beetle may frighten our green young friend out of his senses by his truculent aspect and gigantic stature. But better a thousand stag-beetles than one little empis. For when once the thin and genteel legs have come on the track of the little moth, it is all over with him. Claw after claw is hooked on him, gradually and surely the clasp tightens, and when once he is hopelessly captured, out comes a horrid long bill and drains him dry. C. O.

**Nemesis, The Dastard's.**—The pike is reputed to be afraid of the perch, its strong prickly spines deterring him from attacking so well armed a prey. And in proof of this assertion it is said that if an angler has been unsuccessfully attempting to catch a pike, he can mostly succeed by taking a rather small perch, cutting off its prickly fins, and using it as bait. The pike, seeing that the perch is defenseless, will not lose so excellent an opportunity: he accordingly darts at the bait and is straightway hooked. Here is a parallel to a transaction constantly seen in commercial circles. A dastard, when he sees it defenseless, will often attack a creature of which, at any other time, he has been afraid. But this truculence sometimes leads him to his own ruin. For Nemesis angles for him with the victim which he desires, and then captures him in the moment when he is about to gratify himself by appropriating it. Intriguers, wreckers, adventurers, and money-lenders, beware! The waters of human life have snares even for your rapacity. F.

**Nervousness Initiates Bad Policy.**—The great enemy of the earthworm is the mole. The pewit bird knows this, and in order to make the worms fancy a mole is near, it taps the ground with one leg. No sooner do the worms perceive a vibration or shaking motion in the earth than they make the best of their way to the surface, and thus constantly fall into greater and more certain peril, as the pewit feeds on those he catches. How many nervous persons, through yielding to unnecessary terrors, in like manner frighten themselves away from situations of comparative safety into the very presence of need-less dangers !

HI.

**Nonchalance Assumed as a Stratagem.**—The dark and somber little bee termed *Mellinus arvensis* is rather a slow flier, whereas the flies which it chooses for its prey are all swift of wing, so that it cannot take them by open assault, but is obliged to trust to craft. In order, therefore, to obtain its victims, the *Mellinus* watches some spot where flies most love to congregate, and walks to and fro as if it were quite unconcerned. It continues to move about in this manner until it comes close to a fly, when it springs upon the luckless insect, trounces it in its claws, and carries it off like a falcon with a partridge. Nonchalance is always a very successful stratagem when a piece of cunning business is to be performed. A prejudiced judge who desires to snatch a verdict; an unscrupulous stock-broker who is eager to sell some worthless scrip; a horse-dealer who means to dispose of a "screw"; a pickpocket in a crowd—all understand as well as the *Mellinus arvensis* the unspeakable value of nonchalance as a means to the accomplishment of their designs.

H.

**Nothing New under the Sun.**—When tracts of forest land are cleared of the timber, as often happens in North America, and occasionally in Great Britain, the following season there springs up in abundance, where the trees stood previously, some pretty herbaceous plant that was quite unknown there while the trees existed, and which had been patiently "biding its time." # The explanation of such curious appearances is perfectly simple. The herbaceous plant, whatever it may be, had occupied the ground when there were no trees there, forming some kind of herbage or meadow, and letting fall its annual progeny of seeds. In course of time trees have sprung up, their own seeds conveyed thither either by human agency or by one or other of the wonderful contrivances of Nature which insure propagation whether man give his aid or not. These trees have offered too dense a shade for the herbaceous plant, which retires, as it were, into private life; but when they in their turn are cut down, the original plants return, covering the surface with the old imperishable carpet. The earthly crust of our planet appears

to be stocked in every part with seeds that have been produced in years gone by, scattered upon the surface, and subsequently covered up with soil. Whenever the ground is disturbed, either by the plow or by the spade of the railway excavator, or for any purpose which causes its depths to be overturned, that position which was many feet below being thrown to the surface and exposed to the air, the sunbeams, and the moisture of dew and rain, immediately there springs up a crop of young plants, certainly not originating in seeds only just then brought from neighboring fields, and as certainly from seeds that have been lying in the soil for ages. How they came to be covered up is easy to conceive when we see with our own eyes what is done by wintry floods, and the sweeping down of great masses of earth and soil, which accumulate often to a considerable depth, and are no doubt similarly charged with seeds that, after waiting their turn, will some day grow. For it is an established fact that no seed can germinate or begin to sprout unless it have the threefold influence in direct operation upon it of warmth, moisture, and the atmosphere. Let it be shut in from the access of these and it lies passive, giving no sign of life or growth, and incapable of doing so. In like manner human ideas remain dormant in the mind of the world until there are brought to bear upon them the ordained influences which will cause them to start into life. When those influences come into operation the ideas soon take shape and grow into vigorous forces. "There is no new thing," says Solomon, "under the sun." Perhaps he had an inspired glimpse of the scientific fact that our world was equipped with everything when it was first launched into immensity, and that, though its changes have been marvelous and incessant, they have been changes of form only. "No new thing" has been added. The old forces have been ever unfolding and developing. Nature is like Proteus. Proteus possessed the power of changing into various shapes, nevertheless he remained always Proteus. LI.

**Objectionable Beings may Perform Excellent Services.**

—Of all creatures, the two most at enmity are the repulsive-



looking vulture of Brazil and the crocodile. The female of this terrible amphibious creature lays its eggs, to the number of one or two hundred, in the sand at the side of the river, where they are hatched by the heat of the climate. For this purpose she takes every precaution to hide from all the other animals the place where she deposits her burden; in the meantime a number of vultures or gallinazos, as the Spaniards call them, sit silent and unseen in the branches of some neighboring forest, and view the crocodile's operations with the pleasing expectation of succeeding plunder. They patiently wait till the crocodile has laid the whole number of her eggs, till she has covered them carefully under the sand, and until she is retired from them to a convenient distance. Then, all together, encouraging each other with cries, they pour down upon the nest, hook up the sand in a moment, lay bare the eggs, and devour the whole brood without remorse, and thus, while gratifying themselves, spare the district from the infliction of whole tribes of crocodiles. Nasty though the vulture is in its aspect and habits, we here see it performing most valuable services to the country. Many centuries ago, when his land was overrun by some sort of injurious birds, the King of Meath issued the order: "*Nidus eorum ubique destruendus.*" No policy could be better. Of evil things everywhere, the eggs should be destroyed. Sometimes it is necessary to employ objectionable beings to do the business. We must, therefore, tolerate such, for the sake of the work which they accomplish. It is preferable to endure even an upstart magistrate and a vulturelike policeman than it is to have nests of crime left to incubate in the midst of our population. f

A.

**Offensiveness the Aliment of Some.**—There are men whose livelihood is obtained by performing acts which, even were they necessary, are simply offensive to think of. Their subsistence is derived often from sources which are morally offensive. The cheating lawyer, the swindling accountant, the dishonest beggar, are of this tribe. Their food is obtained by means, and is made up of things, which clean creatures could

not touch; and they do not scruple to rob even those who are of their own horrible nature. They are in one respect worse than the caracara of South America, for in gratifying its great appetite for snakes it does not injure mankind; but they resemble it in the versatility of their depraved tastes, for it does not confine itself to this diet, but feeds indifferently upon carrion, insects, and *Mollusca*, and also, like many vultures, attacks quite new-born lambs. According to some writers, the caracaras, like mean men, are not above taking their prey at second hand; they are said to watch for one of the vultures returning from his repast of carrion, when they fly out upon him and pursue him until he finds it necessary to disgorge his food, upon which the conspirators immediately descend, like a number of schemers and rogues, whose disgusting taste for offensiveness and capacity to enjoy all sorts of prey have stimulated them to the successful plunder of some one who is less wary than themselves.

1L.

**Officious Services, The Routine of.**—The honey-guides (indicators) are little birds inhabiting the interior of Africa. They feed on insects, and especially delight in the pupæ of bees. They employ very curious manœuvres in order to procure them, which denote perfect intelligence. When one of these birds discovers a hive, it endeavors to attract the attention of the first person it meets by frequently repeated cries. When observed, it proceeds to fly till it reaches the place where the hive is, sometimes a great distance, and it takes care to point it out by every means in its power, for which service the Hottentots esteem the indicators so highly that they scruple to kill them. While the honey is being taken, the bird remains in the neighborhood, observing all that passes, and when that work is accomplished, it approaches to reap the fruit of its trouble, the pupæ of the bees. The bees flutter about trying to sting it, but its skin is impervious to their efforts. Often, however, the despoiled bees attack its eyes, and sometimes succeed in blinding it; the unfortunate bird, incapable of guiding itself, then perishes in sight of the place which witnessed its

triumph. Here is an epitome of the officious services of intermeddlers. Whether among birds and bees, or among men and women, the routine of this class of officiousness is always the same. The intermeddler comes forward without any apparent selfishness, and shows us how to secure a real benefit for ourselves. We accept his guidance, and feel greatly indebted to him for his kindness. Presently we find out that he only had his own personal ends in view all the time, and that, though we may have been benefited, he was never in the least concerned about that matter. Then, we have the unpleasantness of beholding him getting into a scrape in connection with the same transaction. Officious intermeddlers are generally not very thin-skinned, so that we are able sometimes to see them get out of their scrape without real injury; but sometimes they get terribly hurt and, it may be, ruined. In that case, unlike the honey-guides, they put all blame for their calamity upon our shoulders, and, without referring to their own selfishness, or to the fact that they make us their cat's-paw, protest that their ruin has come upon them by reason of their good nature in doing us a good turn. A man who has self-respect, and who is sensitive to the sufferings of others, had better always avoid officious intermeddlers. If the honey of life cannot be obtained without their aid, it is best to leave it alone.

RE.

**Opportunists, The.**—Not only some men, but also some of the lower creatures, are endowed by Nature with a wonderful faculty for triumphing over unpropitious circumstances and seizing favorable opportunities. For example, the *Gordiaceæ*, or hairworms, live as parasites in the bodies of various species of insects. When mature, they quit the bodies of the insects at whose expense they have been nourished, and seek some piece of water or moist situation, where they deposit their ova in long chains. If by any chance, on breaking out of their insect home, they find that dry weather has produced a state of things incompatible with their notion of comfort, they quietly allow themselves to be dried up, when they become perfectly hard and brittle; but, strange to say, the moment a shower of rain

comes to refresh the earth with its moisture, the dormant hair-worms immediately recover their activity, avail of the new opportunity, and start off in search of a suitable place in which the great object of their visit to solid earth may be effected.

N. D.

**Opportunity, The Power of.**—The opportunity often makes the man. No personal praise is due to some men for having vigorous and well-developed minds, and in other cases no personal blame is due to those who are feeble and inapt. The question is, What is the opportunity which the individual has had? Now there are many minds which have been dwarfed and stunted by circumstances, though possessing in themselves splendid powers which only needed proper opportunity to develop. So also there are minds which have expanded to surprising proportions in consequence almost entirely of the opportunity influences by which they have been surrounded. The opportunity is to the man what the climate is to the vegetable. For example: in the forests of Brazil vegetation remains in a state of continual activity because excited by the ceaseless action of the two agents, humidity and heat. Hence certain vegetable forms, which assume in our land very humble proportions, present themselves with a floral pomp unknown in temperate climes—some *Boraginaceæ* become shrubs; many *Euphorbiæ* assume the proportions of majestic trees, offering an agreeable shelter under their thick umbrageous foliage. And while we are thus noticing this powerful effect of opportunity, in formation and development, the observation naturally occurs that, as regards mankind, we are obviously unable to form any adequate conception of man's potentialities from what we see of him in his present condition; for it may well be that under a new state of circumstances, in another world, he may be able to exhibit powers and virtues which fail to flourish here, but which amid congenial influences will become grand and glorious.

V.

**Opportunity, The Selection of.**—When it is wished to introduce into a hive of bees a stranger queen bee, after having

removed the original queen bee, every precaution must be used before putting her into the common home. It is only after some time that the bees become aware of the disappearance of their queen; but they then manifest great emotion. They run hither and thither as though mad, leaving off their work, and making a peculiar buzzing sound. If you return to them their original sovereign, they recognize her, and calm is immediately restored. But the substitution of a new queen for the original sovereign does not produce the same effect in every case. If you introduce the new queen half a day only after the removal of the old queen, she is very badly received, and is at once surrounded, the workers trying to suffocate her. Generally she sinks under this bad treatment. But if you allow a longer interval to elapse before you introduce the substitute, the bees, rendered intractable by the delay, are better disposed toward her. If you allow an interregnum of twenty-four hours, the stranger queen is always received with the honor due to her rank, a general buzzing announcing the event to the whole population of the hive. They assign to their adopted queen a train of picked attendants, and draw up in line on her passing by; they caress her with the tips of their antennæ; they offer her honey. A little joyful fluttering of the escort announces that every one in the little republic is satisfied. The labors out of doors and indoors then begin anew with more activity than ever. It is with bees as with mankind: "There is a season when to take occasion by the hand." For want of recognizing this fact many a good enterprise in human government has been utterly wrecked. The premature appearance of a hero among men has often resulted in his annihilation. Reformers should learn that there is an appropriate moment for the introduction of any change. 1.

### **Opposite Qualities Often Found in the Same Substance.**

—In contemplating Nature we shall often find the same substances possessed of contrary qualities, and producing opposite effects. Air which liquefies one substance dries up another. Fire, which is seen to burn up the desert, is often found in other places to assist the luxuriance of vegetation; and water,

which next to fire is the most fluid substance upon earth, nevertheless gives all other bodies their firmness and durability.

MY.

**Opposites, The Combination of.**—Men of opposite tastes and repugnant sympathies are not unfrequently found in close association and even in actual combination. This apparent anomaly is generally explained by the existence of some object which exerts a powerful moral influence over all within its reach. This object acts upon them somewhat as the porous platinum acts on gases. We know the porous platinum absorbs them, and condenses them so powerfully together into its pores that the atoms of two different gases often approach each other sufficiently near to combine together chemically. Hydrogen and oxygen are in this instance compelled to unite, and it can force many other gases, which will not directly combine with each other, to enter into combination. So a noble object draws into the bonds of the closest association individuals who, but for its influence, would remain forever in isolation or perhaps in opposition to each other. Welcome, then, to the combining forces of society !

PR.

**Opposites, The Resemblance of.**—The crocodile's egg will be about two inches and five lines in its greatest diameter, and in its least diameter one inch and eleven lines ; oval and whitish. It is cretaceous in substance, and like the eggs of birds. Yet with this resemblance, what a horrid contrast there is ! The egg gets hatched without any attention of the parent ; and in due time, instead of a beautiful singing-bird, it produces an infant crocodile about six inches in length, which very rapidly becomes a monster fourteen feet long. Its teeth are formidable, and the scales on the back are proof against even a bullet from a gun. It is amphibious, and watches even in the night for its prey. Such is the outcome of an egg resembling that of the world's loveliest songsters. Here we have a lesson upon the resemblance of opposites. Do not be guided only by the shell of things. Consider all the surrounding circumstances. If your egg has not been found in a place associated with ideas

of goodness and beauty, but in a suspicious locality, beware lest it belongs to a moral crocodile. Two human faces may look to the uninitiated very much alike, but as the developing period advances, the one character will become harmonious and spiritual, and the other hard, rapacious, and crocodile-like.

RE.

**Opposites, The Transformability of.**—Since the noblest attribute of water is its blandness, who would be prepared to find that, chemically speaking, it is remarkable for its fiery composition? When its two constituents are burned in the oxy-hydrogen blowpipe, they produce a flame of extraordinary ferocity. Such is the violence with which they combine that it is necessary to keep them from mingling, except in small quantities, unless they are just at the point of ignition. Dr. Clarke placed a brick screen between himself and the dangerous gases when he first experimented on their power, but was nearly killed by an explosion. Perhaps, when the world and all the works that are therein shall be burned up, the ocean may really be the magazine from which fuel may be drawn to support the great conflagration. But let this be as it may in God's good counsel, is it not a startling thought that water, the uncompromising adversary of fire, should be compounded of two elements whose conjunction is accompanied by a passionate burst of flame and a terrible eruption of caloric? PO.

**Organ by Disuse of Function, Loss of.**—One of the most interesting discoveries of modern science is that of a subterranean fauna, all the members of which are blind. The transition from the illuminated tenants of this upper world to those darkened subjects of Pluto is indeed facilitated by certain intermediate conditions. Such is the guacharo, or fruit-eating nightjar, found by Humboldt inhabiting, in immense hosts, a deep sepulchral cavern in South America, shut out far from the remotest ray of light, coming forth under the cover of night, and invested with superstitious terrors by the natives. Such, too, is the *Aspalax* or mole of Eastern Europe, which habitually lives underground; and such is the proteus, a strange sort of

salamander found in the lakes of immense caverns in Illyria. They are believed to come from some great central inaccessible reservoir, where no ray of light has ever penetrated, and whence occasional floods may have forced the individuals that have been discovered. Investigations in various parts of the world have revealed the curious circumstance of a somewhat extensive series of animals inhabiting vast and gloomy caves and deep wells, and perfectly deprived even of the vestiges of eyes. Enormous caves in North America, some of which are ten miles in length, and other vast and ramified grottoes in Central Europe, have yielded the chief of these; but even in Great Britain there are at least four species of minute shrimps, three of which are absolutely blind, and the fourth (though it has a yellow speck in the place of an eye) probably so. All these have been obtained from pumps and wells in the southern counties of England, at a depth of thirty or forty feet from the surface of the earth. The Mammoth Cave in Kentucky consists of innumerable subterranean galleries in the limestone formation, some of which are of great extent. The temperature is constantly throughout the year 59° Fahrenheit. A darkness, unrelieved by the least glimmer of light, prevails. Animals of various races inhabit these caves, all completely blind: for though some have rudimentary eyes, they appear useless for purposes of vision.† Among these are two kinds of bats, two rats (one found at a distance of seven miles from the entrance), moles, fishes, spiders, beetles, *Crustacea*, and several kinds of *Infusoria*. Mr. Charles Darwin has alluded to these singular facts in confirmation of his theory of the origin of species by means of natural selection, or the preservation of favored races in the struggle for life. He takes the view that in the subterranean animals the organs of sight have become (more or less completely) absorbed, in successive generations, by disuse of the function. In some of the crabs the footstalk remains, though the eye is gone; the stand for the telescope is there, though the telescope with its glasses has been lost. As it is difficult to imagine that eyes, though useless, could be in any



way injurious to animals living in darkness, we attribute their loss wholly to disuse. On Mr. Gosse's view, we must suppose that American animals, having ordinary powers of vision, slowly migrated by successive generations from the outer world into the deeper and deeper recesses of the Kentucky caves, as did European animals into the caves of Europe. We have some evidence of this gradation of habit; for as Schiödte remarks, animals not far remote from ordinary forms prepare the transition from light to darkness. By the time that an animal has reached, after numberless generations, the deepest recesses, disuse will on this view have more or less perfectly obliterated its eyes.

RO.

**Overcrowding, Nature's Provision against.**—The natural safeguard against overcrowding is emigration. We see this beautifully illustrated in the case of the starfish. The larva of the starfish is an active, free-swimming animal, having a long body with six slender arms on each side, from one end of which the young starfish is (so to speak) budded off; and when this has attained a certain stage of development, the long twelve-armed body separates from it and dies away, its chief function having apparently been to carry the young starfish to a distance from its fellows, and thus to prevent overcrowding by the accumulation of individuals in particular spots, which would be liable to occur if they never had any more active powers of locomotion than they possess in their adult state.

MI.

**Pain to Pleasure, The Relation of.**—Sensation is modified both by the condition of the body and by the state of the mind with regard to it. Thus we find that in the peculiar condition of mind and body attending mesmeric sleep (according to the testimony of honest witnesses, who are to be believed), persons may have their limbs removed without pain, and the exposed extremities of the divided nerves being roughly handled causes only a sensation of titillation, under which the patient laughs like a tickled child. Pain, indeed, is but the excess of an impression which, in a milder form, is pleasure; and the same degree of impression is either one or the other, according to

the state of attention at the time, or according to the association of the mind. In many respects pain is really an acquired feeling, like fear, and it arises from the mind being taught to associate certain sensations with the idea of danger. Thus when the Esquimaux first had razors given to them, they used to gash their tongues for the pleasure of the new sensation of being cut with so keen an instrument; but after they learned there was danger in such wounds, they never cut themselves without an expression of pain. u.

**Pain Terminates in its Contrary, Excessive.**—It appears that bodily pain, when excessive, generally terminates in pleasure of a nature and kind just the reverse of that which causes the nervous exhaustion. Thus we are informed that Theodosius, a youthful confessor, was put to such exquisite torture for singing a psalm that he hardly escaped with his life; but being asked how he could endure such extreme torment, he said, "At first I felt some pain, but afterward there stood by me a beautiful young man who wiped away my sweat, and so refreshed me with cold water that I was delighted, and grieved only at being let down from the engine." These effects of nervous exhaustion may be illustrated by reference to those experiments on the effects of light upon the retina, first mentioned by Darwin in his "*Zoönomia*." It is remarkable that the contrary color is produced when the sight is fatigued; thus if we look with a fixed stare at a bright green figure until a little wearied, and then look on a white surface, we shall see a red figure. If, however, we continue to look at the red until the nerve is thoroughly exhausted, we shall see green. The direct sunshine quickly exhausts the optic nerve-power, and by looking on it we become for a time quite blind. It is probable that every part of the nervous system is subject to the same law or mode of action, and the brain under mental excitement, as well as physical, is apt to take a contrary condition, by which ideas are suggested to the mind the very reverse of those which exhausted the attention. u.

**Panic, The Peril of.**—The bison is found only in the great

prairies of the American continent. When he is hunted he will frequently turn upon his adversary, and in speed he can outstrip the swiftest horse. ‡ He finds a formidable enemy in the white wolf. Hunting in packs of one or two hundred, the latter fling themselves upon two or three solitary bisons, and surrounding them, worry the huge brutes to death. The bisons, when they catch sight of wolves, manifest the greatest alarm, form into battle array, and are only prevented by excess of terror from taking to flight. This panic-stricken feeling the Indian often turns to his advantage. He clothes himself in the skin of a white wolf, and, with bow and arrows in his hands, boldly faces a herd, crawling toward them on his hands and knees; the affrighted bisons press closely together to receive the supposed foe, who, on arriving at a convenient proximity, suddenly springs to his feet, and utters an unearthly yell. They fall into a frenzy of terror, which enables him to select several victims. ‡ D.

**Paradoxes.**—Many persons are accustomed to apply “paradox” as if it were a term of reproach, an implied absurdity or falsity. But, as Whately has shown, all that is properly implied by the term is that the burden of proof lies with him who maintains the paradox, since men are not to be expected to abandon the prevailing belief until some reason is shown. And Dr. Thomas Brown expressly cautions those engaged in philosophical investigations not to be easily terrified by the appearance of a paradox, inasmuch as it may truly be regarded as a necessary consequence that every accurate and original analysis must afford a result which will appear paradoxical. If we say sorrow is joy, death is life, weakness is might, loss is profit, we utter paradoxes which may appear startling. But in preparing our minds to be unprejudiced before we enter into a consideration of their truth, we may as well observe that Nature herself is full of paradoxes. The water which drowns us as a fluent stream can be walked upon as ice. The bullet which, when fired from a musket, carries death, will be harmless if ground to dust before being fired. The crystallized part of the oil of roses, so grateful in its fragrance—a solid at ordinary temperatures, though readily

volatile—is a compound substance containing exactly the same elements, and in exactly the same proportions, as the gas with which we light our streets. The tea which we daily drink with benefit and pleasure produces palpitations, nervous tremblings, and even paralysis if taken in excess; yet the peculiar organic agent called theine, to which tea owes its qualities, may be taken by itself (as theine, not as tea) without any appreciable effect. (The water which will allay our burning thirst augments it when congealed into snow; so that Captain Ross declares that the natives of the Arctic regions prefer enduring the utmost extremity of thirst rather than attempt to remove it by eating snow. Yet if the snow be melted, it becomes drinkable water; and it *is* melted in the mouth! Nevertheless, although if melted before entering in the mouth it assuages thirst like other water, when melted *in* the mouth it has the opposite effect. To render this paradox more striking, we have only to remember that ice, which melts more slowly in the mouth, is very efficient in allaying thirst.

L. P.

**Parallax Movement, The.**—Parallax movement is that *apparent* shifting of bodies which arises from changing our own position. We cannot stir a step without producing examples of it. If we pace up and down the street opposite to any object on the other side, as a door or a lamp-post, the angular direction or parallax of the object changes at every moment. If we sail down a river, and fix our eyes on some church spire at a distance from its bank, we find that the direction in which we see it is always altering. At first the spire appears in advance of us, then to our side, and lastly it lies behind. If, instead of limiting our attention to one object, we look at several that can be easily observed together, we find that as we move they move, or rather seem to move, and the angles formed by their lines of direction are changed relatively to each other and to us. In these instances of this parallax shifting it must have been remarked that the effect of a change of our position in altering the direction of objects is greater when they are near than

when they are distant. A few paces will sensibly alter the angular position or direction of the door or lamp-post, or the opposite side of the street. But if we look at a church some miles off, or at ships anchored in the offing, we find that we require to move much more than a few paces—in other words, the length of the bases needs to be considerably increased—before we can make any sensible change in the angle or direction in which we see them. If when surveyed from a short base-line objects appear to have changed much, we may infer that they are near; but if the base requires to be long in order to produce an effect, we may equally infer that they are distant.

BE.

**Parasites, Social.**—The family of parasites is large, and includes representatives both small and great. Some of the least powerful of animals live as parasites in or upon the bodies of others, and hardly any are entirely exempt. Such as are too weak to seize and slaughter their peculiar prey seek it in a dead state; and hardly has an animal perished before the carrion-feeders begin their attacks. According to Audubon, the turkey-buzzard gloats harmlessly over recumbent and sleeping animals in a healthy state, but watches patiently by such as are wounded, perishing in a morass, are ill and dying, until life is extinct, and will not leave them.

P.

**Parasites, The Uncertain Pleasures of.**—Parasites who expect any consideration at the hands of their patron are frequently deluded. The patron treats them in the spirit in which the fox treats fleas. When the fox is troubled with fleas, he will go into the water, at first to a small depth, the water rising very little above the bottom of his belly; the fleas, to avoid the water, will creep up toward the top of his back. Gradually he will go deeper and deeper, till the fleas actually gather upon his back, when he will sink his hinder parts, gently and by degrees, below the surface of the water, till the fleas are driven forward, and he will at length merge every part of his body, in the same quiet way, beneath the water, except his nose, on which the

fleas will congregate as on an island. At last he will suddenly sink his nose also and withdraw, leaving the parasites to be drowned.

R.

**Parasites' Offerings, The.**—Parasitic plants send their roots into the substance of another plant, and derive their food from its juices; but though, like some of the human kind, they live upon their neighbor's bounty, it must be admitted that they sometimes reward their benefactor by adorning it with their beautiful flowers. The *Rafflesia Arnoldi*, for example, whose flower is three feet across, and whose cup will contain several pints of fluid, grows attached to the stem of a climbing <sup>vine.</sup> *cistus* in Sumatra. (The mistletoe also, whose silvery berries adorn the oak. Whether these offerings of the parasite bear any reasonable proportion to the amount of damage done by it must be a question open to doubt. <sup>1</sup> Certain it is that the offerings of the social parasite to his benefactor, consisting as they do of subservience, flattery, and petty traits, are no real benefit to anybody; while, on the other hand, the injury which the parasite does to honesty and manliness is most unmistakable. <sup>1</sup> On the whole, we are inclined to think that all the productions of parasites, whether vegetable or human, are not sufficient to make us value the producers very highly.

v.

**Parliamentary Tactics.**—It is stated that the shocks produced by fishes possessed of electrical organs are sometimes sufficiently intense to kill the animal at once. Hence it is a common practice with the conductors of convoys in South America, to collect a number of wild horses and drive them across the rivers in order to exhaust the <sup>825</sup> *gymnotes* of their electricity before the convoy passes. <sup>1</sup> Parliamentary leaders in St. Stephen's understand the wisdom of adopting an analogous policy. They are aware that the slippery eels of the Government Opposition possess considerable power during their early sessional attacks. They therefore so arrange their measures as to induce the Oppositionites to discharge their most fatal shafts upon those whose ruin will not be of much consequence. Then, when the Opposition electricity is exhausted, and toward the end of the

session, the parliamentary leaders carry forward without any dangerous resistance all that they deem of most importance.†  
s.

**Paroxysmal Methods.**—Nature has her paroxysms. Sir Roderick Murchison affirms that by no possible extension of gradual and insensible causes could huge masses of tertiary rocks have been so thrown over as to pass under the older rocks of the Alps, out of which they were formed. That operation, he says, must have been paroxysmal, and no slow process could have accomplished it. The crust and outline of the earth are, in short, full of evidences that many of the ruptures and overthrows of the strata, as well as great denudations, could not even in millions of years have been produced by agencies like those of our times.  
SI.

**Partizan Colors.**—The political color is determined by the political light in which the elector has been reared. The man who has had to grub in ignorance must wear a hue very different from that of his opponent who has lived in the bright light of educated thought. The narrow cells of ecclesiastical bigotry prevent their occupant from acquiring the ruddy color of the unimprisoned truth-seeker. But it is not only among voters at election times that we observe the effect of light in settling the question of color among active workers. We know that certain animals whose natural hue is white, if bred and brought up in darkness, become completely altered in texture and color. The cockroach in its normal state is intensely black. If this insect be taken at an early stage of its existence, and carefully reared in darkness, instead of assuming an inky hue when it arrives at full growth, it becomes nearly white. The larvæ of most insects that burrow in the cavities of the earth, of plants, or of animals, are white from the same cause. When confined under glasses that admit the light, they exchange their whiteness for a brownish hue. The influence of solar light and of moral light explains many mysteries among men and maggots.

I. L.

**Party Idiosyncrasies, The Neutralization of.**—In the

early life of political parties their colors and peculiarities are most conspicuous. In the early life of religious sects their particular and denoting specialties are sharp and clear. As time advances the colors begin to blend with other colors; the peculiarities shrivel as the principles expand; the specialties are softened down into less harsh outlines. The vital power in both cases becomes stronger and stronger with time, though its accidents, badges, and accompaniments are less and less observable. We see this same fading away of individual distinction in the presence of healthy growth if we look at Nature. It is worth notice that several varieties of the hawthorn, as well as of the lime and juniper, are very distinct in their foliage and habit when young, but in the course of thirty or forty years become extremely like each other, thus reminding us of the well-known fact that the deodar, the cedar of Lebanon, and that of the Atlas are distinguished with the greatest ease while young, but with difficulty when old.

VA.

**Party Secession.**—By a rather curious structure of the muscles and bones of the spine, the blindworm is able to stiffen itself to such a degree that on a slight pressure or trifling blow, or even by the voluntary contraction of the body, the tail is snapped away from the body, and on account of its proportionate length looks just as if the creature had been broken in half. The object of this curious property seems to be to insure the safety of the animal. The severed tail retains, or rather acquires, an extraordinary amount of irritability, and for several minutes after its amputation leaps and twists about with such violence that the attention of the foe is drawn to its singular vagaries, and the blindworm itself creeps quietly away to some place of shelter. Even after the movements have ceased, they may again be excited by touching the tail with a stick, or even with the finger, when it will jump about with a vigor apparently undiminished. On frequently repeating the process, however, the movements become perceptibly less active, and after a while the only sign of movement will be a slight convulsive shiver. It sometimes happens in the life of a political party



that there comes to it a moment of great danger. The enemy presses hard upon the organization. "The tail of the party" seems to be selected for special attack, because it is supposed to have given special provocation. Thereupon the "central body" manages to dissociate itself from "the tail." "The tail" naturally shows signs of the greatest irritability. The public are pleased that the "central body" has become discredited, and since "the tail of the party" continues to exhibit signs of great vivacity, they assume that the vital force of the association has been seriously affected. In due time they find that "the detached tail" has never had an independent life, but has performed merely mechanical movements under the influence of unnatural irritability. They further have to observe that even these soon cease because the section is dead, and that the political party itself lives on as well and vigorously as ever. I. L.

**Passion, The Absurdity of.**—There is a passion which is the result of adequate causes, and there is a blind, brutelike passion. We see men under the influence of the latter, furious without a cause, and with great waste of power scattering injuries around upon perfectly inoffensive objects. These men are like the black rhinoceroses which C. J. Andersson says are subject to sudden paroxysms of unprovoked fury, rushing and charging with inconceivable fierceness animals, stones, and bushes—in short, every object that comes in their way. Gordon Cumming describes them as often plowing up the ground for several yards with their horns, and assaulting large bushes in the most violent manner. On these bushes they work for hours with their horns, at the same time snorting and blowing loudly, nor do they leave them in general until they have broken them to pieces. Passionate men are invited to look at these animals and set them up as their models or their monitors, whichever they, in their judgment, may deem more wise. M.

**Passion, The Batteries of.**—Regular ill temper is altogether a different thing from passion. The one corrodes incessantly like an acid or metal; the other discharges desperate shocks,

like the electric shocks of the gymnotus, and spends itself. Do not get in the way of passionate men till their batteries are discharged. The exhaustion of these batteries is only a matter of time and opportunity. And you may watch the process calmly, and be instructed by Humboldt's description of the way in which the gymnotes use their batteries, and see if you discover therein any resemblance to and lesson for passionate persons. He tells us that the gymnotes abound in the vicinity of Calabozo in South America, and the Indians, well aware of the danger of encountering them when their powers are in vigor, collect from twenty to thirty horses, drive them into the pools, and when the gymnotes have exhausted their electric batteries on the poor horses, they can be taken without risk. Time and repose are needed before the batteries are ready to act again. The first assault of the gymnotes, says Humboldt, was chiefly to be dreaded. In fact after a time the eels resembled discharged batteries. Their muscular motion continued active, but they had lost the power of giving energetic shocks. When the combat had endured for a quarter of an hour, the horses seemed to be less in fear. They were no longer seen to fall backward, and the gymnotes, swimming with their bodies half out of the water, were now flying from the horses and making for the shore. The Indians then began to use their harpoons, and by means of long cords attached to them drew the fish out of the water. When the batteries of his passion have been discharged, many a passionate man has also afforded a similarly easy conquest to those who have just watched and waited.

MU.

**Passionate Character, The.**—The panther rarely attacks man without being provoked; but it is irritated at the merest trifle, and its anger is manifested by the lightning rapidity of its onset, which invariably results in the speedy death of the imprudent being who has aroused his fury. Avoid passionate people, for they are like the panther. They may appear harmless, but they are easily provoked, and when rage has taken possession of them they are reckless of your destruction.

**Patriotism, Genuine.**—We may see genuine patriotism in the beehive. While some bees go off to the fields to perform the labor allotted to them there, let us see what the others are doing in the hive. Some are clustering about the top; and now they fix themselves to the roof by the fore legs, while the hinder legs hang down. Upon these other bees suspend themselves, and leave their legs similarly to the disposal of the new-comer, and thus a ladder is rapidly formed, reaching at last to the bottom of the hive.† To facilitate operations, and perhaps strengthen as well as elaborate their scaffolding, they also hang themselves in festoons, each end attached to the roof; and before the actual commencement of labors, there is a series of such festoons formed, so that the bee workmen may ascend and descend in every direction. The entire weight of this living staircase is borne by the individual bees at the top, and cheerfully borne too. Sydserff (reprinted in Cotton) says they will suffer their legs to be disjointed before they will let go their hold. Such is the patriotism of the hive; and such is the sort of patriotism which merits emulation. It is a better sort than that which consists in fighting others. It is more useful. These patriots, if hurt, get their injuries in an endeavor to be of service to their community, and in a work which they know to be necessary. This is more nobly patriotic than getting wounds in endeavors to injure your fellows in a war. B. W.

**People who are Pampered.**—Probably in no class of society do you find such crass stupidity, dense ignorance, and ludicrous imbecility as among people who pamper themselves—gluttons who feed their whims, ailments, and appetites until their mawkishness, obesity, and selfishness are revolting to the eye of common sense, and their senile prattle is offensive to all but idiot ears. It is almost too complimentary to compare these self-indulgent people to the goose; but the resemblance between a natural man, and man after years of pampering, and the goose before and after domestication, is very startling. The wild goose is a pattern of sagacity: it must be content with the grasses, snails, fish, grains, berries, etc., which it finds in the

open fields—in short, with whatsoever niggard winter has left behind, and to travel from stream to stream in quick flight, through darkness and frost. The domestic goose, on the contrary, living solely on potatoes and nourishing corn food, and transformed into a quiet household and pasturage animal, and having no work to do, has become the archetype of stupidity. With these animals all depends on their activity; in slothful gluttony they lose their natural demeanor and energy; the flashing ardor of liberty and nature is extinguished in imbecility. The goose has become a slave to its appetite, but all that is tragical in such a situation is here turned into comedy. The goose is a cavalry soldier on foot, a swimmer upon land. Not for one single moment does that heavy body, snatched from its native element, find its original equilibrium; all center of gravity is lost. On broad oarlike feet she trails along her clumsy body, grown fat in captivity, at every step rocking on one side or half tumbling forward; the neck alone is stretched out stiffly, and the eyes stare stupidly right before them. If you drive her, she never knows whither to go; now turning hesitatingly to the right, and now to the left, always at a loss, always cackling. If you drive her more quickly, the noise becomes a confused shrill scream; the bewildered animal spreads out its wings, beats them violently together, without, however, rising an inch above the ground, for long disuse has weakened the strength of its pinions. ST.

**People, Making Use of.**—There are expert persons who are always making use of us. They constantly delude us into the notion that we are doing something which will benefit ourselves; and at the moment we imagine we are to enjoy some of the best results of our work, they obtain and appropriate them. They never cease to offer us some benefit for the large proportion of our time which they consume, and a long habit of obedience to their superior authority constrains us to continue at the work, though we well know the inducement is a selfish sham, and our labor is the tax an extortioner is exacting. In the hands of these plausible fellows, we resemble a cer-

tain bird which is used in an interesting mode of fishing much practised in China. The clever fishermen employ a black bird called the loo-soo, which is as large as a duck and has a neck as long as a goose. A fisherman takes them in his boat, and when he sets them at liberty they swim upon the water, and at the sight of a fish they dive and secure it in their beaks. A ring is put upon their necks, which will allow them to swallow the smaller fish but not the larger. When the fisherman perceives that their throats are filled with fish, he thrusts into the water a long pole, upon which these birds have been trained to climb and return into the boat; he then squeezes their throats to make them disgorge their prey, and every time this is done he obtains about two handfuls of fish. The greater the number of these birds a fisherman possesses the richer is he considered to be, for like the persons whom others selfishly use for their purposes, they cost but very little to keep.

ME.

**Periodicity, The Law of.**—Certain plants appear, in an inexplicable manner, to be influenced by the law of periodicity as well as by light. Dr. Balfour, when referring to this subject, observes that a plant accustomed to flower in daylight at a certain time will continue to expand its flowers at the wonted time even when kept in a dark room. De Candolle made a series of experiments on the flowering of plants kept in darkness, and in a cellar lighted by lamps. He found that the law of periodicity continued to operate for a considerable time, and that in artificial light some flowers opened, while others, such as species of convolvulus, still followed the clock hours in their opening and closing.

I. L.

**Perpetual Change a Law of Nature.**—In material Nature there is no such thing as rest. It is a fact of which the very first principles of geology assure us, that the solids of the globe cannot for a moment be exposed even to water or to the atmosphere without becoming liable to change. They instantly begin to wear down. The adamantine rock is no accurate symbol of rest, for it is subject to the law of change.

VE.

**Pertinacity Rewarded.**—The fox, being extremely fond of

honey, often attacks nests of wild bees. When the bees rush out and sting him he rolls on the ground and crushes them, and returns to the charge so often that he forces them at length to abandon the hive, from which he extracts both the honey and the wax.

R.

**Physical Agents would be Catastrophic, Alteration of.**

—The physical agents which do not vary are the same in all climates. Their influence, which is so permanent, seems also to be so necessary that were any one of them to be altered, the whole living machinery of the earth would stop, from the animalcule to the whale, and from the byssus to the oak. If water were to become solid at one hundred degrees instead of at thirty-two degrees, no living being as now constituted could exist. If gravity were diminished on the earth, a thousand inconveniences would be felt by all, and though we do not see any reason why life should cease at once, as in the former instance, still the amount of inconvenience would be enormous and intolerable. Thus if it were suddenly reduced to the force which it exerts on some of the ultrazodiacal planets, as Ceres and Pallas, a man, says Herschel, could spring with ease sixty feet high, and sustain no greater shock on coming to the earth than he does now from leaping a yard. Giants might exist, and that enormous animal the whale, which now requires the buoyant power of water to counteract its weight, might then be a denizen of the land.

S.

**Pilgrim Natures.**—In the arid deserts of Central South America there is a strange plant, the *Selaginella convoluta*, a species of club-moss, endowed with very remarkable hygrometric properties. In the dry season, when every particle of moisture is extracted from the soil, it is detached from its growing place, rolled up into a ball, and carried away by the violent equinoctial gales which prevail at the time in these regions, often to very great distances. It remains coiled up in this form for a considerable time; but if carried to a marsh, or the margin of a stream, or any other moist place, it begins slowly to unfold, and spread itself out flatly on the soil, assumes its former vigor

and freshness, takes root, develops its fructification, and casts abroad its seed upon the air. When this new situation is dried up, it resumes its old unsettled habits, and takes advantage of the wind to emigrate to a more favorable locality. It is like an adventurous pilgrim whose very constitution seems to make him long for perpetual changes, and whose temperament is adapted admirably for a roving life. B.

**Pioneers, Unexpected.**—You write down as absurd, and despise as quixotic, many men whose movements you cannot follow, and whose cause you do not understand. But, remember, many such men have been the pioneers of the race. They have pursued their own course steadily and honestly. The glories of the discoveries to which their pathway would lead the coming generations were too splendid for even their eye of faith to behold, but subsequent ages have gazed on them with rapture and gratitude. And such men are not the only examples of humble pioneers who have performed services for humanity. Geography is under obligations to yet more lowly friends, for it is a remarkable fact that the North American bison or buffalo once exerted an important influence on geographical discoveries in pathless mountain districts. These animals advanced in herds of many thousands in search of a milder climate during winter in the countries south of the Arkansas River. Their size and cumbrous forms rendered it difficult for them to cross high mountains on these migratory courses, and a well-trodden buffalo-path was therefore followed wherever it was met with, as it invariably indicated the most convenient passage across the mountains. Thus, as Humboldt assures us, buffalo-paths have indicated the best tracks for passing over the Cumberland Mountains in the southwestern parts of Virginia and Kentucky, and over the Rocky Mountains between the source of the Yellowstone and Platte Rivers, and between the southern branch of the Columbia and the Californian Rio Colorado.

VI.

**Pleasure, Where to Find.**—The fact is undeniable that the portions of rock which have as yet proved to be the richest in

gold are those which are at or nearest the surface. Experience, too, dearly bought in numberless instances, has taught the miner throughout long ages that as he follows the vein-stones downward by deep shafts into the body of the rock, the gold diminishes in volume, so that in many cases the cost of extraction has been greater than the value of the metal.<sup>4</sup> The Ural Mountains will illustrate this fact. The Indians who lived in tracts adjacent to the Slaty Mountains of Chili, Peru, and Mexico followed the simple process of picking the shining material from the gravel, sand, and shingle derived from the chain; so that when the Spaniards, the best miners of the sixteenth century, first colonized South America, they naturally inferred that, if ignorant natives could thus gather sufficient quantities of gold to roof the palaces of their sovereigns, they, as skilful Europeans, might extract incredible quantities from the bowels of mountains the mere detritus or surfaces of which had contributed such a vast amount of gold. But as surely as deep mines frequently enriched the Spanish speculators who sought for copper and silver, so surely gold-mining in the solid rock proved abortive, owing to the slender downward dissemination of gold in a hard and intractable matrix. Experience in every country proves that the field of gold decreases with the depth where mining in the solid rock has been attempted. Here is a lesson to people in search of pleasure. Look out for your pleasure in the duties which lie nearest to your hand. On the surface of your everyday life there are more enjoyments to be obtained than you are disposed to believe. You do not look for them, therefore you do not see them. You erroneously imagine that by burrowing after fortune year after year you will eventually discover happiness. Nothing of the kind. The deeper you sink in your mercenary pursuit, the less will be your reward so far as real pleasure goes. The purest joys are not hidden away from light.

51.

**Pleasure is Seldom Unalloyed.**—We look with great expectancy for the arrival of some pleasure which we imagine will afford us the most complete satisfaction, and no sooner does it



arrive than we find in its train a whole host of petty annoyances and unwelcome accompaniments. It is not only so in social life, but also in the material world. Mr. Matthew Lewis, M.P., in his interesting "Journal" of a residence among the negroes in the West Indies, relates how eagerly in Jamaica, after three months of drought, the inhabitants long for rain; and when the blessing at last descends, it is accompanied by terrific thunder and lightning, and has the effect of bringing out all sorts of insects and reptiles in crowds; the ground being covered with lizards, the air filled with mosquitoes; the rooms of the houses with centipedes and legions of mosquitoes. And it will, on inquiry, be found that the enjoyment of nearly every anticipated pleasure is in like manner more or less alloyed by reason of the unpleasant things which seem inevitably to attend it. JO.

**Pleasure, Varieties and Contrarieties in the Idea of.—**

Every creature is made for happiness, and receives happiness according to its capacity; and it is very wrong to suppose that because *we* should be miserable if we led the life of a vulture, or sloth, or a bat, therefore these creatures are miserable. In truth, the vulture is attracted to and feels its greatest gratification in those substances which would drive us away with averted eyes and stopped nostrils. The sloth is, on the authority of Waterton, quite a jovial beast, and anything but slothful when in its proper place; and as for the bat, it sings for very joy. True, the song is not very melodious, neither is that of the swift or the peacock, nor perhaps that of the cochineal fowl, but it is nevertheless a song from the abundance of the heart.

C.

**Pliability, Perils from.—**The dunes form the extreme line of the Brittany coast for nearly two hundred miles, from the Adour to the Garonne. They are hills of white sand, as fine and soft as if it had been sifted through an hour-glass. Their outline, therefore, changes every hour. When the wind blows from the land, millions of tons of sand are hourly driven into the sea, to be washed up again on the beach and blown inland by the first Biscay gale. A water hurricane from the west will

fill up with sand square miles of shallow lake, driving the displaced waters into the interior, dispersing them in shining pools among the "murmurous pines," flooding and frequently destroying the scattered hamlets of the people, and inundating their fields of rye and millet. D.

**Poison as a Protection.**—One of the greatest trees of Southern Asia, and possibly one of the greatest in the world, is the teak or Indian oak: (*Tectona grandis*), which covers vast areas in Hindustan, and flourishes also in Pegu, Ava, Siam, Java, and the Burman Empire. > This most useful tree is handsome and stately, often attaining a stature of one hundred and thirty to one hundred and fifty feet, with a trunk of proportionate diameter, upright, well shaped, and surmounted by wide-spread branches. The poisonous properties of its wood preserve it from the attacks of vermin, but render it dangerous to work, for men who are but lightly wounded by its splinters die after a very brief interval. ↑ D.

**Poison of One is the Food of Another, The.**—It is a wonderful fact that the food which may suit one person may happen to be actually injurious to another, and the medicine which will administer relief to one person will be positively an aggravation of the same disease in another person. Among birds, we find that reptiles which are to other existences poisonous are used for food. # The king-vulture (*Sarcorhamphus papa*) is an inhabitant of a great part of South America. It is most abundant within the tropics, but extends its range beyond these lines, being found commonly not only in Guiana, Brazil, and Peru, but also in Paraguay and Mexico, and occasionally visiting Florida in search of food. It feeds upon reptiles and carrion. Its visits to Florida are said to be generally made after the herbage has been burned upon the prairies, where it feeds greedily upon the half-roasted snakes and other reptiles which have been unable to escape from the flames. MU.

**Poisonous Influences.**—Poisonous influences are often invisible. Hydrogen gas is the most subtile and permeating of aëriform bodies; and it appears, by the analysis of Morcati and

others, that it favors the diffusion of morbid poisons, as a menstruum and vehicle holding in solution both animal and vegetable matters, which, being brought into contact with the blood, at once alter the chemical relations of that vital fluid, and produce a kind of persisting ferment in it. This gas facilitates decay, and its presence prevents the oxygen from duly acting on the blood, the carbon of which it causes very quickly to be combined with oxygen, so as to form carbonic acid, perhaps even in the blood-vessels. There are moral poisons in the world equally subtle and deadly in their influence. Insincerity, lust, falsehood, selfishness, and irreverence are among the social poisons which abound. The air is rife with them. If either of these poisons enters into the nature of a man, his moral character soon gives evidence of decay. Under the influence of any one of them the passions readily combine to alter the whole of his spiritual organization, and virtue becomes poisoned at the center.

U.

**Poisonous Lurking in the Pleasurable, The.**—Bees sometimes collect their honey from poisonous plants, and instances are recorded of persons having died from partaking of this honey. # Kirby and Spence quote some proofs of this, such as that given by Dr. Barton, the eminent physician, who records that in 1790 many persons died in Philadelphia from eating honey. Inquiries were instituted, and it was found that the honey was derived by the bees chiefly from the flowers of the *Kalmia latifolia*. Xenophon, in his "Anabasis," mentions that some of his soldiers were singularly affected by honey which they took in Asia Minor. Some of them seemed as if intoxicated, others were much excited, and others lay on the ground as if about to die. The poisonous lurks in the pleasurable, not only in matter but in morals also. How often when enjoying apparently harmless pleasures, men unexpectedly become the victims of moral evil ! Wickedness seldom comes to us in its essential bitterness. If it did, we should shun it. It generally insinuates itself in some form of attractive sweetness, and frequently by means of unconscious agents as innocent as the bees.

MU.

**Polished People.**—Scarcely any gem reveals its true beauties in a natural state. The diamond in the rough is most unattractive, and would be thrown away by a casual observer as a worthless pebble; its perfections are hidden under a hard crust, which can only be removed by its own powder. The deep velvet hue of the sapphire, the glowing brilliant red of the ruby, the soft clear green of the emerald, and the delicate strata of the onyx, alike only display themselves in their true character after the lapidary has used his skill in cutting them into facets and polishing them; and on the perfection of this operation depends in a great measure the beauty of the gem. As it is with these, so it is also with human gems. A human “diamond in the rough” is a most unattractive lout. If he is to be ever valued as his inherent qualities deserve, he must be polished by culture and good society. Few people have “the seeing eye” to recognize human “jewels” so long as they remain in a coarse condition; but when they have become smooth in their manners and polished in their language, their value is applauded by everybody. There are, of course, plenty of polished stones which are not gems, and plenty of polite people who are of no moral worth. But that does not diminish the necessity that gems should be polished, and that geniuses should be refined.

DI.

**Political Notions, The Alternity of.**—There are lagoons at the mouths of many rivers, as the Nile and Mississippi, which are divided off by bars of sand from the sea, and which are filled with salt and fresh water by turns. They often communicate exclusively with the river for months, years, or even centuries; and then a breach being made in the bar of sand, they are for long periods filled with salt water. The Lym-Fiord in Jutland offers an excellent illustration of analogous changes; for in the course of the last thousand years the western extremity of this long frith, which is one hundred and twenty miles in length, including its windings, has been four times fresh and four times salt, a bar of sand between it and the ocean having been as often formed and removed. The last eruption of salt

water happened in 1824, when the North Sea entered, killing all the fresh-water shells, fish, and plants; and from that time to the present, the seaweed, *Fucus vesiculosus*, together with oysters and other marine *Mollusca*, have succeeded the *Cyclas*, *Lymnea*, *Paludina*, and *Charæ*. These phenomena find a correspondence in the political world of England, where the tides of opinion alternate between the fresh water of Liberalism and the salt sea of Toryism. The operation of these respective forces, and their dissimilar products, can be traced not only in the Statute-Book, but all through modern history. The shores of the English ecclesiastical world bear vast evidence of the operation of the alternate currents of freedom and of bigotry. The Henry Eighth, the Elizabeth, the Mary, the James, and the Cromwell periods especially are rich in their illustration of the achievements of torrents of alternate opinion.

E.

**Popular Thought, Currents of.**—When we observe the action of public opinion in this country, and the way in which various sections of the community become subject to sudden and sometimes inexplicable opinions, which afterward in modified forms are then, perhaps, adopted or opposed by other sections; and contemplate the singular cross-workings and courses of popular thought and sentiment, we are reminded of the movements and constitution of currents of air. And in both cases we find that reflection enables us to account for a great deal of phenomena which at first appeared inexplicable. The lower stratum of intelligence, like the lower clouds, always moves slowly, and for the same reason. Any person looking from a mountain, on a cloudy storm raging in a valley below, may observe that the lower part of the storm moves with less velocity than the upper part, producing an irregular rolling or tumbling motion of the clouds, that evidently arises from the resistance which that part of the wind encounters that presses on the surface of the earth. The frictions and obstructions on each particular part of the surface impede the progress of the lowest part of the air, and that other portion which immediately follows climbs over the lowest stratum of air, but in so doing it is

itself impeded by the obstacle it has to encounter in the lower and retarded air. A third portion of air then climbs over the second, and in so doing is itself retarded, and in this way successive strata of air follow and climb over the other strata that present obstacles to their progress, and thus form overlapping and rising currents, moving with increasing velocities as they proceed at a greater distance from the obstructions on the surface of the earth. ON.

**Popular Ideas, Growth and Persistency of.**—The way in which popular ideas have been introduced into English society, have taken root and persistently flourish, reminds us of the account Mr. M. G. Lewis, M.P., gives of the introduction of vassals grass into Jamaica. It appears that many years ago a new species of grass in a small quantity was introduced into the island for the purpose of feeding pigs. Its seeds soon became scattered about by the birds, and it then took possession of the cane-pieces, whence to eradicate it was often, and is, an utter impossibility, the roots being as strong as ginger and insinuating themselves (like Liberal ideas) underground to a great extent. In a very short time it overran several parishes, obtained a footing in the island, and increased the cost of cultivation of the cane by at least one third. Where the moral and intellectual soil of a country is favorable to the growth of particular ideas, and these are distributed by persistent men, it is marvelous to observe with what rapidity they spread, and with what tenacity they cling to life, despite all the efforts made to eradicate them by the people who hate them as being worse than vassals grass. JO.

**Posthumous Influence.**—Some stars are so distant that their beams may have occupied thousands of years in journeying to the earth, and yet these bodies, if suddenly annihilated, would still continue to shine upon us for thousands of years to come. So, too, there are great men whose existence has long since terminated, but the influence of whose spirit still irradiates our world. Milton, Shakespeare, and Christ, though gone from

our sphere, still shine upon it as spiritual stars of the first magnitude.

PO.

**Posthumous Space.**—The space occupied on the surface of our planet by the different families of animals and their remains is inversely as the size of the individual. The smaller the animal the greater, as a general rule, is the space occupied by his remains. Take the elephant and his remains, or a microscopic animal and his, and compare them. The contrast as to space occupied is as striking as that of the coral reef or island with the dimensions of the whale. The graveyard that would hold the corallines is much larger than the graveyard that would hold the elephants. And what about the posthumous space occupied by the conventionally great men and the conventionally small men? Why, the big elephantine personages of courts and levees, the colossal grandees who are able to sustain without being crushed a gorgeous world of honors and decorations, when they die occupy scarcely any space on our book-shelves: all their "remains" are in a very small compass. Whereas the men who were conventionally considered quite small creatures are not so easily disposed of. Their remains in poetry, literature, and art are the abiding things; and, long after they themselves have departed, that which they have left occupies important space in the public mind. Look on your book-shelves. What is the space filled by princes and courtiers, who in life were gigantic personages: and what that occupied by those workers whom the world called insignificant? T.

**Power without an Explanation, A.**—In most chalky rocks, such as those of which the white cliffs of old England are composed, many portions run well out to sea. If these are examined at low water they will be found to be perforated with numerous holes, running to some depth, and varying considerably in dimensions. These holes are made by the *Pholas dactylus*, one of the most remarkable animals in creaturedom. Hard rocks and timbers are constantly found perforated by this curious shell, but how this operation is performed no one knows.

It is the more wonderful because the shell is by no means hard, and cannot act as a file. Indeed in some species the external shell is almost smooth. And, moreover, if the shell were used as the boring-tool, the hole would be nearly circular, instead of being accommodated to the shape of the shell, as is seen to be the case. However they get into the stone, there they may be everywhere found, and it does not seem to be of much importance whether their habitation be limestone, sandstone, chalk, or oak. Even the Plymouth breakwater in England, solid stone as it is, was very soon attacked by these creatures. C. O.

**Power, The Avarice of.**—You would not think a man who had held high office in the state for long years would descend to mean and paltry tricks to obtain still more power. But he will. You would not believe that a vast capitalist would go out of his way to grab at the farthing which the rough hand of toil is endeavoring to hold. But he does. Power is avaricious alike in birds and men. The more the man has the more he wants. These men who thus display the avarice of power are the white-headed eagles of society. During spring and summer the white-headed eagle follows a course to procure sustenance which you would judge very little suited to a bird so well able to supply itself without interfering with other plunderers. No sooner does the fish-hawk make its appearance along the Atlantic shore, or ascend the numerous and large rivers, than the eagle follows it, and robs it of the hard-earned fruits of its labor. Perched on some tall summit in view of the ocean, or of some watercourse, he watches every motion of the osprey while on the wing. When the latter rises from the water with a fish in its grasp, forth rushes the eagle in pursuit. He mounts above the fish-hawk, and threatens it by actions well understood, when the latter, fearing, perhaps, that its life is in danger, drops its prey. In an instant the eagle, accurately estimating the rapid descent of the fish, closes its wings, follows it with the swiftness of thought, and the next moment grasps it. The white-headed eagles of society pursue their course with equal disgrace to themselves; and their method is not more exalted.



They take advantage of their strength, and the great elevation to which fortune has raised them, for the greedy purpose of discovering the movements of those who are below them, the better to rob the more humble of even the little they possess. P.

**Precedence.**—The Pondicherry vulture is an Indian species greatly resembling the Bengal vulture in its habits, although it belongs to a different genus. Now although this Pondicherry vulture and the Bengal vulture are nearly of the same size, the former appears to have the power of inspiring some kind of awe or dread in his brother scavenger, for whenever he descends upon a carcass on which a crowd of Bengal vultures are feeding, they immediately make way for him, and even retire from their banquet until he is satisfied. This proceeding has obtained for the Pondicherry vultures the unearned title of king-vultures, both from Europeans and natives. There are Pondicherry vultures in society—men and women whose title to be considered superior to those around them is an exceedingly obscure one. But they have somehow or other got themselves established as the kings and queens of social circles, and their compeers retire before their presence with a dread and respect worthy of the Bengal vulture itself. Sometimes the table of precedence, which is the Bible of the fashionable world, may be settled upon intelligible principle; but it will often be found to bear witness to anomalies of deference quite as extraordinary as the peculiar courtesy and awe exhibited by these vultures one toward the other. MU.

**Prejudices, The Tenacity of.**—Prejudices form a large family in the continent of ideas. Their tenacity of life is marvellous. They resemble the sea-worm, the white water-worm, and those little worms with feelers which are found at the bottom of dirty ditches. In all these the nobler organs are of such little use that if taken away the animal does not seem to feel the want of them; it lives in all its parts, and in every part, and by a strange paradox in Nature, the most useless and contemptible life is of all others the most difficult to destroy. A.

**Preparatory Intellectual Processes.**—It frequently hap-

pens that the very insects which we most admire, which are decorated with the most brilliant colors, and which soar on the most ethereal wings, have passed the greater portion of their lives as burrowers beneath the surface of the earth. The well-known May-fly or ephemera—so delicate in its gauzy wings, so marvelous in its muscular power, which enables the new-born being to disport itself in the air for a period which, in comparison with our own lives, is equal to at least forty years, and passing the greater portion of its terrestrial existence as an inhabitant of the air—has spent a life of some three years or more hidden from human gaze. Let this fact remind young people who are impatiently anxious to soar high in the world's notice, that there are preparatory processes necessary for aerial spirits. The orator sustains the flight of his eloquence all the better, and the figures of his rhetoric are all the brighter, because he spends the first portion of his life burrowing in the useful obscurity of a library. Away from all distractions, in the seclusion of reading and meditation, he acquires the intellectual powers which enable him to rise to his proper sphere.

H.

**Preparedness, Constant.**—Some of the dragon-flies have wings always expanded even when the creatures are resting, so that they can on being disturbed take flight in an instant, there being no necessity for them to unfold their wings. These insects can fly in all directions without turning backward or forward, and to the right or left, so that to those inexperienced in their habits they are very difficult of capture. *Semper paratus* is a good motto.

MU.

**Pretensions, Disappointing.**—When a man causes a fuss and make-believe about doing something which we well know he cannot do, he reminds us of the ostrich in its pretensions to fly. That great bird when he starts spreads his big wings and expands his splendid plumage, as though, at least, he were about to soar to the clouds. But no: however swift his movements, his immense pinions never raise him above the ground, to even the height of a mud-lark. How many poets, authors, states-

men, set out on their several performances with a manner which seemed to say that they were certain to show at last what a flight genius could take ; and in the result only taught the world that their course was simply of the usual prosaic kind, and that their big pretensions were impotent to raise them at all out of the every-day dust of life !

N. E.

**Prodigal Endowment.**—We are, sometimes amazed at the prodigal way in which Nature has lavished her gifts upon mean things. Some contemptible royalties enjoy a profusion of endowments which positively staggers the senses. Burns seems to have reached a white heat of indignation when he described all the advantages bestowed upon the “coof” who was “ca’d a lord,” who “struts, and stares, and a’ that.” It is wise, however, to realize as a fact that Nature does in some cases appear extravagant in her endowments. But, on the other hand, it should be remembered that she only is so in the case of organizations of a low type. As a compensation for the meanness of their intelligence, she gives them other things. For example : there is a marine worm, the *Eunice sanguinea*, which is sometimes to be found on our coast, and attains the length of about two and a half feet. This creature, says Dr. Hartwig, consists of about three hundred rings. A brain and three hundred ganglia, from which about three thousand nervous branches proceed, regulate the movements, sensations, and vegetative functions of a eunice ; two hundred and eighty stomachs digest its food ; five hundred and fifty branchiæ refresh its blood ; six hundred hearts distribute this vital fluid throughout the whole body ; and thirty thousand muscles obey the will of the worm, and execute its snakelike movements. Why, this seems to suggest a superfluity of force equal to that found in attendance upon royalty !

SE.

**Profitable Panic=Mongering.**—Wolves prey upon the moose or red deer, but are unable to catch them by speed of foot. In consequence, a number of wolves will combine together to encompass a herd of deer on large plains bounded by steep cliffs. While the deer are grazing, the wolves will form

a crescent round them, and creep stealthily forward so as to alarm them as little as possible at first; but when they see that they have fairly hemmed them in, and cut off their retreat, they begin to move more quickly, and at last rushing on with loud yells they terrify the deer, and urge them to flee toward the precipice, as if they knew that when the herd is once put to its speed, some of them must be driven over the cliffs, the hindermost forcing on those in front. When several have thus been precipitated, the wolves go down at their leisure and feast upon their mangled bodies. ‡

R.

**Progress Sometimes only Seeming, not Real.**—The currents of the sea are found to run in all directions, east, west, north, south, being formed by various causes—the prominence of the shores, the narrowness of the straits, the variations of the wind, and the inequalities at the bottom. These currents are of the most material consequence to the mariner, without a knowledge of which he could never succeed. It often happens that when a ship gets unknowingly into one of these, everything seems to go forward with success, the mariners suppose themselves every hour approaching their wished-for port, the wind fills their sails, and the ship's prow seems to divide the water, but at last by miserable experience they find that, instead of going forward, they have been all the time receding. The business of currents therefore makes a considerable article in navigation, and the direction of their stream and their rapidity has been carefully set down.

A.

**Protection of Parents by their Offspring, The.**—The birds can teach ungrateful children their duty toward aged parents. → It is an old tradition with regard to storks, says Mr. Morris in his "British Birds," that they take care of and nourish their parents when they are too old to take care of themselves, from whence the Greek word "pelargicos," signifying the duty of children to take care of their parents; and "pelargicoi nomoi," signifying the laws relating to that duty—both derived from the Greek word for a stork: "pelargos," from "pelas," black, and "argos," white, alluding to the prevailing colors of the stork.

HI.

**Protective Influences.**—Protective influences may be apparently insignificant, yet in reality mighty. There is a grassy-looking weed that grows among the sand near the sea-shore. It is so coarse in substance that even hardy cattle turn from it with disdain. Yet this sea-reed, *Arundo arenaria*, as it is called, performs such useful service to man that its presence in this particular situation cannot be deemed less than providential. Many low-lying coast lands require to be defended not only from the sea, but also from the sand cast ashore by the waves. This loose sand gradually accumulates, is driven hither and thither by every gale of wind, and has a tendency to encroach upon the fertile fields and convert them into desert wastes. The threatened danger is averted by this humble weed, and the slightest consideration of its habits demonstrates that it was specially created for the purpose. While most plants instinctively seek out the richest soils, this one prefers the driest sands. The gritty storms so often raging around, which would destroy the tender organization of other plants, beat harmlessly against the flinty coverings of this hardy weed. In striking its roots into the sand, it binds the loose particles together; and as its sapless-looking tufts rise above the surface, they arrest the stony current as it drifts along, and consolidate it into little mounds. In process of time these are piled up into the well-known hills by the growth and decay of countless generations of tufts. Such sandhills are common in various parts of Britain where the coast is low; but they are seen on a more extensive scale in the rugged “dunes” which stretch in almost unbroken succession along the shores of Holland. Not only do they intercept the devastating progress of the sand, but they likewise form the stoutest bulwark against the encroachments of the sea.

BE.

**Protectiveness that Imperils.**—The parents of that sociable bird the turnstone exhibit great attachment to their young, but, as is the case with another species, their too great fondness is sometimes the ruin of their offspring, their cries of distress at the approach of an intruder directing attention to them. HI.

**Prudence a Natural Instinct.**—Even some of the lower

creation possess an instinct which prompts them to provide for their safety when it is threatened by an impending calamity. When that reptile-looking fish, the lepidosiren of the Gambia, perceives that the waters are falling on the approach of the dry season, and that food is becoming scarce, it buries itself in the mud, and there awaits in a dormant state the return of the rains.

BE.

**Pugnacity, Inherent.**—There is no credit due to our citizens who delight in fighting. Their propensity only shows that they have not worked out of them those attributes of the lower animals which Tennyson enjoins them to expel from their bosoms. It should be the glory of manhood to rise above the animals. Nevertheless, there is undoubtedly in some low-natured men an inherent pugnacity. They resemble game-fowls. Game-fowls are notorious for their pugnacity; and the young cocks crow, clap their little wings, and obstinately fight with each other even while under their mother's care. Mr. Darwin relates cases of whole broods, scarcely feathered, stone-blind from fighting; the rival couples moping in corners, and renewing their battles on obtaining the first ray of light. Let us honor them as heroes!

VA.

**Pugnacity, The Folly of.**—*Plus sot qu'un grillon* (a greater fool than a cricket) is a saying which has arisen from the destruction into which the field-cricket (*Gryllus campestris*) allows itself to be drawn through its pugnacity. The cricket lives alone in its hole. Country children take these insects by presenting a straw to them in the hole. The pugnacious cricket seizes it directly with its mandibles, and lets itself be drawn out of the hole and so taken. || How often in negotiations, in debate, and in society does the pugnacious man, by a similar abandonment of his prudence, allow himself to be victimized by those who keep their temper, and laugh at him for losing his!

I.

**Pugnacity, Political.**—To make two male crickets fight, the Chinese place them in an earthen bowl about six or eight inches in diameter. The owner of each tickles his cricket with

a feather, which makes them both run round the bowl different ways, frequently meeting and jostling one another as they pass. After several meetings in this way, they at length become exasperated, and fight with great fury, until they literally tear each other limb from limb. #The managers of political parties enjoy the spectacle of their faction-mongers fighting with a similar passion. They irritate them into action, often about matters that are not worth a feather's weight, and then watch with zest the pugnacity which ruins reputations and destroys honor. P.

**Pugnacity of Small Natures.**—Small men are generally the most pugnacious, and the same circumstance is noted of small animals. Even the little weasel, although sufficiently discreet when discretion will serve its purpose, is ever ready to lay down that part of valor, and take up the other. C.

**Puny, The Might of the.**—Puny things have sometimes a more mighty power than large ones. The chalk cliffs of southern England, which form a stupendous barrier to the wild fury of the German and Atlantic Oceans; the limestone rocks, of which immense tracts of country are almost entirely composed, were not formed by the gigantic remains of megatheriums, mastodons, and other extinct monsters which lived and died amid the wildest convulsions of a nascent world, but by the shields and shells of inconceivable myriads of organisms, to each individual of which the stage-plate of the microscope would be as large a field for its gambols as a whole country would be to one man. It is not by the hurricane or the furious storm that our fairest orchards and most luxuriant fields are laid waste and converted into wildernesses of skeleton leaves and blackened withered stalks, but by the ravages of the tiniest insects and the minutest and most contemptible fungi. FO.

**Puny Creatures, The Destructive Power of.**—We sometimes underestimate the power of those whom we consider contemptible opponents. Now, as a matter of fact, the puny things of Nature are the greatest destroyers. And in society it is the scandal-monger, the hypocritical religionist, the splenetic obscurity, the man of little cranium and insignificant name and

nature, who ruin reputations and wreck social organizations. These apparently contemptible individuals in their capacity for mischief are like certain beetles. The various species of *Hyllobius* are, where they abound, very injurious in forests of the pine tribe, as they often quite destroy the young trees. The larch, now so extensively planted for its useful timber, is at times much destroyed by the *Hyllobius abietis*. This beetle seems to prefer in Germany the *Pinus sylvestica* and *Pinus abies*, though it attacks all the firs indiscriminately. It gnaws the young shoots, thus causing them to wither. The extremities of a tree thus attacked (the most vigorous and healthy trees are invariably selected by the beetle) several years in succession, sickness and death inevitably ensue, in dry seasons especially. The mischief this beetle occasions in woods where it abounds is almost incredible. One would have thought a beetle's influence on a forest would have been only trifling. And we think contemptible men have only trifling power. But the man and the beetle can be desperately mischievous. MU.

**Puny Things, The Posthumous Uses of.**—The fossils of the tertiaries are in some respects more interesting than those of any other series of strata. It is not in the humbler classes of animals that this interest chiefly lies; and yet even in this department the tertiaries present us with a wonder quite unexampled. We refer to beds of greater or less thickness, composed exclusively of the solid remains of animalcules—creatures individually so small that only a microscope could enable human eyes to see them. Such a rock (called tripoli) is found at Bilin in Bohemia, and at Planitz, near Zwickau in Saxony. It has been used as a powder in some of the arts for ages, without any suspicion of its being thus composed. But within the last few years M. Ehrenberg, a scientific Prussian, has fully ascertained that it consists simply and wholly of the silicious coverings of certain minute creatures, some of which belonged to species still to be found in stagnant waters. To common perception, the powder of which the rock may be said to consist resembles flour; and in Norway, where it is accordingly called



berg-mehl (that is, mountain-meal), it is actually used in times of famine as food, for which it is not entirely unsuitable, seeing that there is always a percentage of animal matter left in it in addition to the silicious shields. So extremely small are the creatures of which these rocks form the sepulcher that, according to M. Ehrenberg's calculation, ten millions of millions of individuals might be required to fill the space of a cubic inch.

CH.

**Purpose a Destroyer of Pain.**—When the mind is intently set on using the muscle, it scarcely perceives anything but what it wishes. Infuriated madmen in their violence will inflict deadly injuries on themselves without feeling; and the soldier in the warmth of the fray, when comes "the tug of war," is unconscious of his wounds; and the brutal pugilist in the ring bears bruising like an ass.

U.

**Quarrel-Mongers.**—The dayal (*Copsichus saularis*) in India is constantly caged, both for the sake of its song and for another quality—its pugnacity. Fighting the tame birds, according to Mr. Hodgson, is a favorite amusement of the rich; and he adds that no game-cocks can contend with more energy and perseverance than these little birds. The same author states that the professional bird-keepers take advantage of this pugnacious disposition in their pets to make them instrumental in the capture of their wild brethren. During the spring, it appears, the male birds are continually challenging each other, and as soon as one has uttered his note of defiance it is answered by another, and these altercations usually end in a battle. The bird-keeper accordingly carries a tame male on his hand to the nearest garden or grove, when the bird at his bidding utters his challenge, and if this is answered by a wild bird, the tame one is immediately slipped, and a desperate combat commences, in the course of which the man easily secures the wild bird, the tame one actually assisting in the act by holding his opponent with his bill and claws. It is worthy of notice that these birds, like many human beings, possess this horrible pugnacity notwithstanding the fact that they are wonderfully musical. Musical

noises evidently have nothing whatever to do with the existence or non-existence of harmony in the character. A woman's voice may, like a bird's, be beautifully melodious, yet her disposition may be monstrously harsh and unpleasant. It is also to be observed, in connection with the dayal, that like all pugnacious creatures it easily becomes a mere tool in the hands of quarrel-mongers. Whenever birds, the lower animals, or human beings are of a pugnacious character, there are always found at hand quarrel-mongers who will facilitate and foment their silly battles, and turn the results to their own benefit. There are quarrel-mongers of every order, but they all proceed upon the same principle—get pugnacious beings to fight and then benefit yourself by their folly. Even the great stock-brokers, army contractors, and political adventurers, who urge angry nations on to war, are quarrel-mongers who, like the bird-keepers, act precisely on this principle.

**Quarreling, Profitless.**—The great owl often has battles with the tawny eagle. The fight is sometimes so severe that it terminates in the death of both combatants. Occasionally the warriors are found with their claws so deep in one another's flesh that they cannot withdraw them, and they both die on the scene of action. At other times the great owl having conquered, he has been found with his talons so entangled in his adversary that they have fallen to the ground together, and the conqueror, unable to disengage himself, has himself been made a captive. ‡

RE.

**Quarrels, Imperfect Acquaintance Accounts for.**—The cat is less an enemy of the dog than is generally believed. When unacquainted with one another, they have little sympathy in common; but when associated for a length of time they become good friends. Then they lick each other, sleep on each other, and understand making mutual concessions, which enable them to live in peace—in short, the most perfect harmony frequently reigns between them. Every one who keeps cats and dogs can testify to the correctness of this assertion. Our quarreling neighbors who live “a cat-and-dog life” should note this inter-

esting fact. Since they dispute with each other like these animals do in the imperfect stage of their acquaintance, so may they, like them, become good friends by learning more of each other. †

M.

**Quarrelsome Character, The.**—The *Mantis oratoria* is a singular insect. Nothing equals the ferocity of these *Orthoptera*. If two of them are shut up together, they engage in a desperate combat; they deal each other blows with their front legs, and do not leave off fencing till the stronger of the two has succeeded in eating off the other's head. From their very birth the larvæ attack each other. The male, being smaller than the female, is often its victim. † Kirby tells us that in China the children procure them as in France they do cockchafers, and shut them up in bamboo cages to enjoy the exciting spectacle of their combats. There exist men and women whose disposition for quarreling resembles that of the *Mantis oratoria*. They are born with the instinct for quarreling. It asserts itself in the earliest stages of childhood, and grows stronger and stronger with years. It is enough for any two of them to be together to be sure of a disagreement. They never require a subject for quarreling about; they indulge in quarreling because it is their nasty nature.

J.

**Quarrelsomeness, The Blunders of.**—Quarrelsome people remind the observer of the sea-crabs. Sea-crabs are naturally quarrelsome, and have serious contests together by means of their formidable claws, with which they lay hold of their adversary's legs, and wherever they seize, it is not easy to make them forego their hold. † The animal seized has therefore no alternative but to leave part of the leg behind in token of victory. Such are the blunders of quarrelsomeness that a crab, when irritated, and made to seize one of its own small claws with a large one, does not distinguish that it is itself the aggressor, but exerts all its strength, and cracks the shell of its own small claw, thereby injuring itself, as quarrelsome people always do. Feeling itself wounded, it casts off the piece in the usual place, but continues to retain the hold with the great claw

for a long time afterward ; the very picture of quarrelsomeness making itself and its own injuries a matter for ridicule. The quarrelsome man loses power ; he needlessly injures himself like the crab ; he strikes out to attack others, and in his eagerness to do so he simply wounds himself, and his senses being obscured by his passion, he then hugs the grievance he has himself made, and thereby becomes the object of derision. P.

**Quarrelsomeness, The Penalties of.**—If you will always be ready to go off like a loaded gun even by an accident, depend on it you will get into difficulty. Your testy, quarrelsome people not only injure themselves and others, but when in danger their deliverance is often rendered totally impossible because of their inveterate habit of contention, and they are plunged from injury into absolute ruin. As soon as they meet they begin a quarrel. They are placed in a position of common danger, but even in discussing it they quarrel. They actually are overtaken by the danger and still they quarrel, being more eager about injuring each other than about any other consideration. The proceedings in Nature somewhat resembling theirs are those which we notice among the ruffs. In the beginning of spring when the ruffs arrive among English marshes, they are observed to engage with desperate fury among each other ; it is then that the fowlers, seeing them intent on mutual destruction, spread their nets over them and take them in great numbers. Yet even in captivity their animosity still continues ; the people that fat them up for sale are obliged to shut them up in close dark rooms, for if they let ever so little light in among them, the turbulent prisoners instantly fall to fighting with each other, and never cease till each has killed his antagonist, especially, says Willoughby, if anybody stands by. A.

**Questions, Nature's Method of Answering Man's.**—A force cannot be seen or grasped ; we notice it only in the effects which it produces. If we would know whether a piece of steel possesses magnetic power, we apply a needle, and try whether this is attracted by it or not ; we then conclude from its behavior as to the absence or presence of magnetism. Precisely

the same course, that of *experiment*, must be taken in order to become acquainted with the chemical forces, the affinities of bodies for each other. Every experiment is a question put to a body, the answer to which we receive through a phenomenon, that is, through a change which we observe, sometimes by the sight or the smell, sometimes by the other senses. PR.

**Quiescence, Objections to.**—Had the sea been made without motion, and resembling a pool of stagnant water, the noble races of animated Nature would shortly be at an end. Nothing then would be left alive but swarms of ill-formed creatures, with scarcely more than vegetable life, and subsisting by <sup>corrupted</sup> putrefaction. Were this extensive bed of waters entirely quiescent, millions of the smaller reptile kinds would there find a proper retreat to breed and multiply in; they would find there no agitation, no concussion in the parts of the fluid to crush their feeble frames, or to force them from the places where they were bred: there they would multiply in security and ease, enjoy a short life, and putrefying, thus again give nourishment to numberless others as little worthy of existence as themselves. But the motion of this great element effectually destroys the number of these viler creatures; its currents and its tides produce continual agitations, the shock of which they are not able to endure; the parts of the fluid rubbing against each other destroy all viscidities; and the ocean, says Oliver Goldsmith, if we may so express it, acquires health by exercise. A.

**Quiet, The Wisdom of Being.**—The great majority of carnivorous animals, particularly such as are of an active and powerful nature, reject dead substances; and while the vulture, whose beak and claws are comparatively weak, selects such, the mighty and bold eagle will hardly stoop to carrion in its fiercest hunger; and, indeed, so marked is the preference, and so decided the selection, for active living prey, that in many cases <sup>the prey</sup> it is perfectly safe while motionless, and is only seized when it betrays its vitality by a change of position. ‡ Thus the frog sits intently watching an insect as long as it is quiet, and only seizes it when it moves. The green tree-frog is thus pre-

served in confinement during the winter, when no little insects are to be procured, by gently moving little pieces of meat or dead flies in front of it. (The falcon will only stoop for living birds, and if they be thrust into its cage, he will not touch them as long as they remain motionless. Very constantly, too, among men we see that the more self-assertive and rapacious of the race leave weaker ones alone until those weaker ones attempt to defend themselves or exhibit fussiness. The exhibition of their activity is the settling of their fate. Their safe policy was quietness. Abandoning that, they abandoned all their chances.

P.

**Quite at Home.**—The stork reveals a connection between his mode of being and action and that of men. Carelessly and confidently he walks about the court and garden of the farmer; in seaport towns, he even stalks on amid all the bustle of the streets, and expects every one whom he meets to make room for him; he wanders from market to market, from fountain to fountain, examines boldly here a basket and there a dish—in short, he feels himself at home. Despite all familiarity, he knows how to make himself respected; and he maintains not only his perfect freedom, but even a sort of superiority. st.

**Rage of Fools, The.**—The orang-utan in general, when he feels himself sorely stricken by his pursuers, hurriedly climbs to the summit of the loftiest tree within his reach, and if he finds himself still pursued he passes on to another. Meanwhile he utters the most dolorous cries, and vents his impotent rage upon the tree which serves him for a refuge. One after another he breaks the greatest branches; but they immediately escape from his grasp, and fall to the ground. Thus he does by this expedient of his fury only expose himself the more fully to the projectiles directed at him. The stripped tree is no longer available as a shelter. The Malay hunters, therefore, take no heed of all this fracas, but patiently wait until the orang has thoroughly exposed himself, to aim their arrows or rifle-balls with the greater certainty. Now the orang-utan has vast muscular strength, powerful tenacious hands, and strong canine

teeth, and when he chooses to defend himself, he can easily tear any antagonist to pieces, and yet this is how he deports himself. One might suppose he had taken a lesson from human fools on the subject of impotent rage. How many men there are who when in a passion never resort to a reasonable defense of their own interests, but indulge their own fury, and so expose themselves entirely to the mercy of cunning enemies ! D.

**Rapacious Character, The.**—The mole, says Étienne Geoffroy-Saint-Hilaire, does not experience a sense of hunger like other animals ; with it this want is of the most powerful description, it is an exhaustion which is felt as a kind of frenzy. Take two moles of the same sex, place them before each other in a room, and in a very short time the stronger will have devoured the weaker. Such is ever the rapacious character, whether found among men or the lower animals. It is always ravening after something, and it will even devour that which it ought to spare rather than endure any check to its voracity. Among men of commerce it is not at all unusual to see the stronger of two speculators appropriate to himself the whole of the weaker man's pecuniary estate. This man does not resemble the mole in his greediness alone, but also in his vision. His moral eyesight is very small, and made for burrowing among things "of the earth, earthy." M.

**Rapacious Misfortune-Seekers.**—The shark's swiftness of motion is such that he can outstrip the swiftest vessel, and his strength so great that no unarmed man can cope with him successfully. With one snap of his powerful jaws, a shark of average size will cut a man in two. Frequently in the West Indian seas the negro crew of a boat will cease rowing, and with a significant air indicate to the voyager the hideous form of a shark following in the rear, and apparently waiting for some false movement or sudden accident, which, by capsizing the frail skiff, may provide his ravenous maw with food. Frequently, too, on tempestuous nights, when the wind and the sea seem to howl a funeral dirge, the shark appears in the midst of the heaving billows ; the seamen recognize his presence by the

phosphorescence—the “elfish light” that glints from his shining scales—and know that he lusts after a victim. In tropical waters he follows the ships with indefatigable patience, ready to swallow the unfortunate who may fall overboard. Like some cruel men, he anticipates the suffering and misfortune of others, in order that he may turn them to a personal advantage.

MY.

**Rapacious Instincts, The Physiognomy of.**—Rapacious instincts show themselves in the physical configuration. Look at a crowd of men. It is not the man with the calm expansive forehead and the genial eye who is the soldier. It is that man of brutal brow, keen cold glance, and whose features are like a hawk. What a contrast his *nil admirari* fierceness offers to the bright intelligent movements of many in the crowd on whom he turns his military scowl! The physiognomy of rapacious instincts is equally well marked in birds. Michelet bids us to observe that birds of prey, with their small brains, offer a striking contrast to the numerous amiable and plainly intelligent species which we find among the smaller birds. The head of the former is only a beak; that of the latter has a face. What comparison can be made between these brute giants and the intelligent, all-human bird, the robin-redbreast!

T. B.

**Reasoning Power in Animals, The.**—Man has been justly said to be supreme over the other creatures as the tool-making and tool-using animal. We observe, however, some efforts at the use of tools, though but imperfect, in the elephant, who carries a leafy branch in his trunk to shade himself from the sun; in the ape, who puts a stone into an open oyster to prevent it from closing, or lifts a stone to break nuts, or beats the elephant's trunk or his fellow-apes with a stick, or takes the cat's paw, if the story be true, to extract chestnuts from the fire; in the fox, who spreads cods' heads as a bait to catch gulls, or immerses himself in the water, and holds a bough over his head to deceive the hunters; in the racoon, who captures deer with pieces of moss; in the bear, who, as told in the account of Cook's third voyage, rolls down pieces of rock to crush stags;



in the rat when he leads his blind brother with a stick ; in the bee, which uses propolis to cover a slug that has died in the hive ; in the spider, which attaches a piece of wood to its web to steady it ; and in the nymphæ of water-moths, which select straws in which they may float, putting in a bit of wood if it be too heavy, or a bit of gravel if it be too light. Indeed it has been said that there is nothing that man effects with all his tools, and all his skill in the use of them, of which some indication may not be seen in the brute or the insect. Thus the beaver and the bee give examples of construction, the spider of weaving, and the little nautilus of sailing. "Who taught the raven in a drought" (asks Bacon in his "Advancement of Learning") "to throw pebbles into a hollow tree where she espieth water, that the water might rise so as she might come to it?" It is a fact that the raven when she sees water that she cannot reach seems to consider and find out means for bringing it within her reach. She finds herself necessitated to raise it to a certain limit, and she does so by putting pebbles into it. And her mode of proceeding appears to us as much the result of reason (though of a lower degree of exercise of it) as man's invention of the pump. *R.*

**Reciprocity a Law of Nature.**—When all the arguments of free-traders and of protectionists are ended, the scientific man is delighted to be able to invite the student to hear what Nature has to say on the question of reciprocity. One lesson is enough to pour on it a flood of light sufficient to settle all further debate. It is that of the plants and animals in relation to the atmosphere. Let us investigate the matter attentively. Plants possess two modes of respiration: one diurnal, in which the leaves absorb the carbonic acid of the air, decompose this gas, and extract the oxygen while the carbon remains in their tissues; the other nocturnal, and the reverse, in which the plant absorbs the oxygen and extracts the carbonic acid; that is to say, they breathe in the same manner as animals do. The carbon which is used by plants during the day is indispensable to the perfect development of their organs and the consolidation of their tissues.

By respiration plants live and grow. Plants purify the air injured by the respiration of men and animals. If animals transform the oxygen of the air into carbonic acid, plants take this carbonic acid back again by their diurnal respiration. They fix the carbon in the depth of their tissues and return oxygen to the air in reparation. Such is the admirable equilibrium which the Creator has established between animals and plants, such the beneficial communication which assures to the air its constant soundness, and maintains it in that state of purity which is indispensable to support the life of the living creatures which cover the globe. v.

**Religious Belief, Innate.**—It is probable that no human race is destitute of some belief, more or less explicit or obscure, in the existence of supernatural powers, good and evil, and likewise of a future and invisible state; but there are nations who scarcely recognize in the Invisible Being anything like will or power to punish the guilty or reward the good, and who do not suppose the future state to be a scene of retribution. This is the account which missionaries and other persons have given of the Polynesian superstitions. The adoration of rude nations is generally directed toward visible objects. From this remark we must except most of the American nations, who are said to believe in the existence of a spiritual ruler of the universe. By one class of rude nations the heavenly bodies are worshiped, and the Polynesians connect this superstition with a mythology which is poetical and not devoid of ingenuity. Others, like the African nations, worship *fetishes* or visible objects, in which they suppose some magical or supernatural power to be concealed capable of exercising an influence on their destiny, and of insuring success in any undertaking—a superstition of which traces are to be discovered among the vulgar in many countries.

MA.

**Remote Influences, The Cumulative Value of Small and.**—It is a startling fact that if the earth were dependent upon the sun alone for heat, it would not keep existence in animal and vegetable life upon its surface. It results from the

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researches of Pouillet that the stars furnish heat enough in the course of the year to melt a crust of ice seventy feet thick—almost as much as is supplied by the sun. † This may appear strange when we consider how immeasurably small must be the amount of heat received from any of these distant bodies. But the surprise vanishes when we remember that the whole firmament is so thickly sown with stars that in some places thousands are crowded together within a space no greater than that occupied by the full moon. We learn from this fact that we are greatly indebted in the physical world to the cumulative operation of small and remote influences. The same truth holds good in the intellectual world. We may, according to our estimate, consider any great mind either before or after Shakespeare as our intellectual sun, and may attribute to his influence the glory of our literature. But upon a closer inspection we shall find that we are deeply indebted to thousands of remote and modest mental stars whose united influence has done a work for us far greater than has been adequately recognized. They have shone over jails and gibbets, over persecuted altars and desecrated houses, and have borne names never known to fame; but because they were stars, their influence has made itself felt, and our intellectual world owes to them as much gratitude as it does to its intellectual sun.

C. M.

**Reprisals, The Principle of.**—When we consider the almost invincible power which the crustaceans derive from their armor, their muscular vigor, their ferocity, and their numbers, we ask, How is it that they have not depopulated the shores where they meet none but victims, no enemies capable of contending with them upon equal terms? For formidable as they are to all the tribes of mollusks and zoöphytes, what have they to fear—except in a few countries certain littoral or amphibious mammals which, for the most part, only attack them as a last resort, preferring prey more easily devoured, and assisting them in their work of extermination rather than fighting them? Their tyranny then seems at first sight absolute and without counterbalance. Such, however, is not the case. The crusta-

ceans undergo at certain epochs a fatal crisis, which, delivering them up defenseless to external shocks and the blows of their enemies, places an easy vengeance within the reach of the oppressed. These epochs are their sloughing times, when, willy-nilly, with great difficulty, and at the cost of the most painful and sometimes the deadliest efforts, they are forced to shed their armor of proof, to expose their living flesh barely covered with a thin soft pellicle, and to bury themselves piteously under the sand until the calcareous secretion shall be reformed and solidified anew. This is their season of fear and flight. Their hiding-places are easily discoverable, and once unearthed the disarmed brigands are lost beyond redemption. Myriads perish in this manner, devoured by other animals, crushed among the stones, or dashed in pieces against the rocks by the movement of the waves. Thus Nature enforces her law of reprisal. The power of all tyrants and oppressors has its fixed limits. The quarrelsome crustacean and the despotic king are alike subject to the hour of retaliation. MY.

**Republican Principle, The Success of the.**—Bees are among the best workers in the world, and their community is a most intelligent community. They illustrate the successful working of the republican principle. Bees constitute republics, not monarchies. The queen bee is simply the mother bee. All the population is the issue of a common mother, and each bee of the female sex can become a queen—that is to say, a mother bee—if it receives an appropriate nourishment. The mother bee is nothing more than president of the republic.† The vice-presidents are all those female bees which at any given moment may be called by choice—that is, by popular election—to fulfil the functions of the sovereign, when death or accident has put an end to her existence. I.

**Reputation without Reality.**—In Java, and some other of the great Indian islands, there exists a black panther, which has gained, it is difficult to say how, the reputation of extraordinary ferocity and daring. He owes his fame solely to the imagination of the natives, and differs from his congeners in

no single respect but the blackish color of his skin. A skilful naturalist, who was for some years a resident in Java, relates that while botanizing in the fields and jungles early in the day, he frequently roused the black panthers in their lairs. At first he was somewhat startled by the apparition of an animal of such terrible renown, but seeing him turn tail very quickly on his approach, he soon grew reassured, and troubled himself no more at these rencounters than if he had met a cat or a dog. There are plenty of "black panther" reputations in society. In literature, the arts, politics, and philanthropy, it is easy to find fine specimens of men enjoying a great reputation, which they owe solely to the credulity or ignorance of those of their fellow-men who have not the seeing eye to distinguish between the real and the spurious, or the intellectual capacity to test a vulgar renown by actual facts. D.

**Reputation, Fictitious.**—According to popular notions the blindworm is a terribly poisonous creature, and by many persons is thought to be even more venomous than the viper, whereas it is perfectly harmless, having neither the will nor the ability to bite, its temper being as quiet as its movements, and its teeth as innocuous as its jaws are weak. Mr. J. G. Wood says that the origin of this opinion may be found in the habit of constantly thrusting out its broad, black, flat tongue with its slightly forked tip; for the popular mind considers the tongue to be the sting, imagining it to be both the source of the venom and the weapon by which it is injected into the body, and so logically classes all creatures with forked tongues under the common denomination of poisonous animals. IL.

**Reputation, An Undeserved.**—Many reputations are undeserved altogether. Let us not in this connection trouble now about statesmen, poets, or authors, but take from natural history a familiar illustration, that of the eagle. The great strength of the eagle enables it to prey upon creatures whose size would prevent them from being attacked, or at all events being carried off, by any of the smaller *Falconidæ*. The eagle is in fact the great tyrant of the wild regions which he inhabits, but as we

must bear in mind that nothing that he can meet with there has any power of defending itself from his terrible swoop, we must not allow ourselves, as our forefathers did, to magnify him into a type of magnanimity and courage. This view is induced by the magnificent aspect of the bird, and the abundant evidences of terrible energy furnished by his every movement. But in true courage he is not superior to most of the smaller hawks, and certainly inferior to the peregrine and many other falcons, which will even venture to attack and drive away this so-called monarch of the waste when he approaches too near their nests. So that really when we remember what a fame the eagle has always had for magnanimity and for courage, it is obvious, in view of the facts, that he, like many other birds and men, has obtained a reputation which is undeserved. IL.

**Resemblances may Mislead.**—We know that the roar of the lion is considered the most terrible of cries, which inspires all the animals, and even man, with unconquerable dread. But a curious fact, remarked by Livingstone, is the singular resemblance of the lion's roar to the cry of the ostrich. The great African traveler says that he carefully inquired the opinion of Europeans who had heard both. He had asked them if they could discover the least difference between the roar of the one and the cry of the other. They all informed him that they could not perceive any, at whatever distance the animal might be placed. The voice of the lion, generally, is deeper than the ostrich's; but Livingstone was only able to distinguish it with certainty because it is heard during the day and the ostrich's during the night. D.

**Rest, The Instinct of.**—All creation seems to possess the instinct of rest. We well know how eagerly the human heart sighs for rest. But it is not so well known that even plants sleep. Their strange sleep, says Figuier, vaguely recalls to us the sleep of animals. In its sleep the leaf seems by its disposition to approach the age of infancy. It folds itself up, nearly as it lay folded in the bud before it opened, when it slept the lethargic sleep of winter, sheltered under the robust and hardy

scales, or shut up in its warm down. We may say that the plant seeks every night to resume the position which it occupied in its early days, just as the animal rolls itself up, lying as if it lay in its mother's bosom. All the world seems to express the sentiment contained in the words uttered by one of old, who desired the wings of a dove in order to seek and obtain rest.

v.

**Retaliation, A Limited.**—Camels have a great share of intelligence, and the Arabs assert that they are so extremely sensible of injustice and ill treatment that, when this is carried too far, the inflicter will not find it easy to escape their vengeance, and that they will retain the remembrance of an injury till an opportunity offers for gratifying their revenge. ~~Eager~~, however, to express their resentment, they no longer retain any rancor when once they are satisfied; and it is even sufficient for them to believe they have satisfied their vengeance. Accordingly, when an Arab has excited the rage of a camel, he throws down his garments in some place near which the animal is to pass, and disposes them in such a manner that they appear to cover a man sleeping under them. The animal recognizes the clothes, seizes them in his teeth, shakes them with violence, and tramples on them in a rage. When his anger is appeased he leaves them, and then the owner of the garments may make his appearance, and without any fear ~~may~~ load and guide him as he pleases.

p.

**Revengeful, The Penalty of Being.**—Small birds have an intense natural antipathy of nocturnal birds of prey. If one of these birds happens to be seen out of its lurking-place during the day, they assail it vigorously, resent its intrusion, and avenge the oppression exercised over them during the night by combined attacks. This antipathy has been taken advantage of for the purpose of catching birds ever since the days of Aristotle. The catcher imitates, for instance, the voice of an owl about an hour before sunset, when the birds will flock together and perch on the trees or bushes in the suspected neighborhood. The twigs, etc., having been previously covered with

bird-lime, the birds pay their liberty and perhaps life as the penalty of their desire to avenge themselves on the owl. RE.

**Revivification.**—Among the plants of the desert is the rose of Jericho (*Anastatica Hierochuntina*), an annual which contracts itself into a ball, and, blown about by the breeze, seems a dead and withered mass of twigs. But plunge it into water and it expands, <sup>and</sup> regains the bloom of life, <sup>afford</sup>ing a remarkable example of what is called “revivification.” The fable respecting it is that the first time it ever bloomed was on the eve of the Nativity, and that its flower remained open until Easter. D.

**Revolutionary Forces, The Indeterminateness of.**—Volcanoes will remain for centuries in a state of repose, and then, with little or no warning, become fearfully active. Vesuvius, restless in the early world, was so long quiescent that it was considered extinct, when about sixty years after the Christian era it suddenly renewed its eruptions. Ten years afterward came that tremendous convulsion which brought upon Pompeii and Herculaneum, the Italian cities of the plain, the awful doom <sup>of</sup> Sodom and Gomorrah. The revolutionary forces of the world somewhat resemble the volcanic. They are indeterminate. They slumber sometimes for generations; and by despots their quiescence is mistaken for extinction. But, like the subterranean fire, the principle of justice is never extinguished. It may smolder for a period in darkness, but it is ever aglow in the central heart of humanity; and at the very moment when tyrants and their myrmidons are congratulating themselves upon the impregnability of the institutions of despotism, it may suddenly startle them from their audacious dream by the eruption of a revolution which will engulf them in a fiery retribution.

MAR.

**Revolutions, The Advantages of.**—Insect life in tropical America swarms as luxuriously as the vegetation; and there are many insects, which, however useful in their own place, are apt to get into houses, and there multiply to such an extent that they become a real plague, and nearly drive the inhabitants out



of their own houses. There are insects that bite, insects that suck, insects that scratch, insects that sting, and many that are remarkable for giving out a most horrible odor. There are great centipedes, and always plenty of scorpions, while lizards, snakes, and other reptiles are so common as almost to escape attention. For a time these usurpers reign supreme. But when the foraging ants make their appearance, the case is altered, for there is nothing that withstands their assault. #The inhabitants throw open every box and drawer in the house, so as to allow the ants access into every crevice, and then retire from the premises. (The presence of these insects may be always known by the numbers of pittas or ant-thrushes, which feed much upon them, and which are sure to accompany a column of foraging ants on the march.) Presently the column of the vanguard approaches; a few scouts precede the general body, and seem to inspect the premises, and ascertain whether they are worth a search. The long column then pours in, and is soon dispersed over the house. The ants penetrate into the corners, peer into each crevice, and speedily haul out any unfortunate creature that is lurking therein. Great cockroaches are dragged unwillingly away, being pulled in front by four or five ants, and pushed from behind by as many more. Rats and mice speedily succumb to the onslaught of their myriad foes, and the snakes and lizards fare no better. In a wonderfully short time the foraging ants have completed their work, the scene of turmoil gradually ceases, the scattered parties again form into line, and the procession moves out of the house, carrying its spoils in triumph. When the inhabitants return to the house they find every intruder gone. The foraging ants are by no means pleasant creatures, but in this case they do very useful work. It is analogous to that which, when political rascalities have become unbearable, has to be done for mankind by revolutionaries. Revolutionaries are not the most select people on earth any more than foraging ants are the most pleasant insects; but when Nature decides upon a thorough extermination of any-

thing, she selects, not the daintiest, but the most capable instruments for the case in hand. She takes care to have the work thoroughly well done. H.

**Rich, The Cost of Getting.**—The condor of the Andes possesses the habits and voracity of other vultures, has the loftiest flight of all the winged race, enormous strength, and great audacity. He frequently pounces upon living animals, but his non-retractile talons, blunted by their attrition on the rocks, do not permit him to carry off his prey; he contents himself with fixing it against the ground with one of his claws, while he rends it to pieces with his powerful beak. Gorged with food, he becomes incapable of flight, and you may then capture him. And does not this resemble the career of many a vulgar wealthy man? His brilliant daring and rapid upward rising into the light have excited admiration and stimulated high hopes. Soon, however, you discover that he ascended so high only because it made more certain his intended grasp of the low earthly object on which his greed was set. Behold, the climax of the brilliant career after all is the coarse, vulgar, greedy snob, abandoning himself to gluttony and abominable self-gratification, deprived by his own lust alone of every power which enabled him once to rise. D.

**Right Themselves, The Tendency of Things to.**—Nature has endowed things with a tendency to right themselves. Let us take an example from what happens in the case of the atmosphere. By respiration, flame, putrefaction, air is rendered unfit for the support of animal life. By the constant operation of these corrupting principles the whole atmosphere, if there were no restoring causes, would come at length to be deprived of its necessary degree of purity. Some of these causes seem to have been discovered and their efficacy ascertained by experiment. And so far as the discovery has proceeded, it opens to us a beautiful and a wonderful economy. Vegetation proves to be one of them. A sprig of mint corked up with a small portion of foul air, placed in the light, renders it again capable of supporting life or flame. Here, therefore, is a constant cir-

culatation of benefits maintained between the two great provinces of organized Nature. The plant purifies what the animal has poisoned ; in return, the contaminated air is more than ordinarily nutritious to the plant. Agitation with water proves to be another of these restoratives. The foulest air shaken in a bottle with water, for a sufficient length of time, recovers a great degree of its purity. Here then, again, allowing for the scale upon which Nature works, we see the salutary effects of storms and tempests. The yeasty waves, which confound the heavens and the sea, are doing the very same thing which was done in the bottle. Nothing can be of greater importance to the living creation than the salubrity of their atmosphere. The agitations of the elements tend powerfully to restore to the air that purity which so many causes are constantly impairing. N. T.

**Rule without an Exception, No.**—It seems the rule among all creatures to desire above all things to preserve their bodies intact and unhurt. Yet there is an exception to this rule. The brittle starfishes have a habit of breaking themselves to pieces whenever they are alarmed. It appears almost strange that such a creature should experience a feeling of alarm, or indeed any mental emotion whatever. Yet the brittle starfishes are peculiarly timid, and have some instinctive way of detecting danger. One would think that however the danger might be dreaded, it could do no worse than beat the starfish to pieces, and yet the creature adopts this singular mode of escaping from its enemies. F.

**Seeming Evil Real Good.**—Much in life which appears good is really evil. But it is also true that much which appears real evil is substantial good. Take as an illustration the snow. The shivering and discomforted population are complaining of its presence as a wretched evil. But let us inquire a little into the matter. What is its mission ? What the plumage does for the bird, wool for the animal, and clothing for the man, snow does in winter for the soil. The farmer and gardener look with dismay at a hard and continued frost which is not preceded by a fall of snow. The snow is nearly a non-conductor, and, when

sufficiently deep, may be considered as absolutely so. The surface may therefore fall to a temperature greatly below thirty-two degrees; but the bottom, in contact with the vegetation of the soil, does not share in this fall of temperature, remaining at thirty-two degrees, a temperature at that season not incompatible with the vegetable organization. Thus the roots and young shoots are protected from a destructive cold. So that the snow is no evil, however much it may, under certain circumstances, have the appearance of being an evil. In like manner adversity, with all its train of chilling influences, is often a real blessing. And many a storm which has had a most threatening aspect has proved a blessing because of the pure and healthy influences which have accompanied it. Observation and inquiry will readily afford numberless instances equally striking, in which seeming evil has proved itself to be real good. HA.

**Seeming Generosity.**—There is a thing which passes for generosity which, when analyzed, is found to be nothing but selfish policy. Sometimes a flint-hearted magistrate makes a great show of a generous consideration for the condition of the prisoner, and pompously discharges him on that ground, as he says; whereas it will often be found that the charge against the man was one of which the law could take no cognizance, or else which the magistrate felt himself unable to grapple with. He gets great credit for his clemency. His manœuvre, however, reminds those who see through it of the spider's tricks. We well know that the moment an ill-starred fly or other insect comes in contact with the net of the spider, it is sprung upon with the rapidity of lightning, and if the captured insect be of small size the spider conveys it at once to the place of slaughter, and having at its leisure sucked all its juice, throws out the carcass. If the insect be somewhat larger and struggles to escape, the spider envelops its prey in a mesh of thread passed round its body in various directions, and its wings and legs thus effectually secured, it is conveyed to the den and devoured. But when a bee or large fly, too powerful to be mastered by the spider, happens to get entangled in its toils, then the wary ani-

mal, conscious of its incapacity to contend against such fearful odds, makes no attempt either to seize or embarrass the victim. On the contrary, it assists the entangled captive in its efforts to free itself, and often goes so far as to break off that part of the web from which it may be suspended. This act has upon it the color of seeming generosity, but in reality it is nothing more than the performance of selfish cunning. The tyrant, feeling himself incapable of doing an injury, determines to have no molestation. To obtain this end he performs an act of manumission. In this policy he is not only like the magistrate, but he is also very like the man who gets great credit for generosity in giving, but who gives not out of the fullness of a warm heart, but because he desires to avoid the inconveniences to himself, which he knows will attend any other policy than that of seeming generosity. The applicant is to him just a great awkward intrusion into the web of circumstance; if he does not attend to it there will be some embarrassment. In his position it is prudent to attend to it. Therefore he does. This is his generosity. Nothing more. P.

**Self-Adapting Power, Man's.**—Man possesses a grand capacity for adapting himself to the requirements of circumstances. Much as he needs fresh air and light, he is able to spend his existence in the operations of mining, where the air is always impure, and light never comes. Important as exercise is to him, he nevertheless can accustom himself to avocations which are entirely sedentary and deprive him of all muscular activity. He needs his legs for walking, but if they are amputated we soon find him providing himself with some other means of locomotion. He requires his hands for painting and writing; but when he has not hands, we find him painting and writing by means of his toes. His teeth are indispensable for mastication; but when he loses them, he invents a contrivance of his own in their place. Now, elastic as this power of adaptation to circumstances is in man, it is scarcely less marvelous in some of the lower creatures. Take, for example, the water-spider (*Argyroneta aquatica*). Her instinct instructs her

to fabricate a kind of diving-bell in the bosom of the water. She usually selects still waters for this purpose. Her house is an oval cocoon, filled with air, and lined with silk, from which threads issue in every direction, and are fastened to the surrounding plants. Mr. Thompson says that in this cocoon, which is open below, she watches for her prey, and even appears to pass the winter, when she closes the opening. It is most commonly, yet not always, under water, but its inhabitant has filled it for her respiration, which enables her to live in it. She conveys the air to it in the following manner: she usually swims on her back to the surface, then she turns over and jerks a bubble of air under her abdomen, and appears like a globe of quicksilver. With this she enters her cocoon, and displacing an equal mass of water, ascends again for a second lading, till she has sufficiently filled her house with it, so as to expel all the water. How these little animals can envelop their abdomen with an air-bubble and retain it till they enter their cells, is still one of Nature's mysteries. It is a wonderful provision which enables an animal that breathes the atmospheric air to fill her house with it under water, and by some secret art to clothe her body with air as with a garment, which she can put off when it answers her purpose. This is a kind of attraction and repulsion that mocks all inquiries; and man's inventions of the diving-bell and the air-balloon, to enable him to investigate sea and sky, and his many other successful achievements over the difficulties of circumstance, are scarcely more astonishing. P.

**Self-Deception.**—Sometimes we persistently deceive ourselves. We insist upon pursuing a policy for our benefit which all but ourselves clearly see to be absurd and useless. We cling to a pet project and nurse a worthless conceit long after the folly of both is recognized by everybody else. But we are not altogether to be blamed. For instinct itself is sometimes at fault, and its powers are uselessly applied. A hen will sit with the greatest tenacity on rounded pieces of chalk; and the Hamster rat breaks the wings of dead birds as well as of living ones before it devours them. Insects also occasionally err on

the same principle, as when the blow-fly lays its eggs on the flower of the *Stapelia*, deceived by its carrionlike odor. A spider, deprived of its egg-bag, will cherish with the same fondness a little pellet of cotton thrown to it. P.

**Self-Dependence a Condition of Power.**—M. Guérin-Méneville has called the silkworm “the dog of insects,” for it has been domesticated from the most ancient times. But in losing its self-dependence it has been deprived of great part of its strength. The moth of the silkworm can no longer keep its position in the air, or on the leaves of the mulberry, when they are agitated by the wind. It can no longer protect itself under the leaves from the burning heat of the sun and from its enemies. The female, always motionless, seems to be ignorant of the fact that she has wings. The male no longer flies; he flutters round his companion without quitting the ground. It ought, however, in the wild state to be possessed of a sufficiently powerful flight. Mr. C. Martins found that after three generations reared in the open air, the males recovered their lost power. There can be no doubt that it is a principle in Nature that self-dependence is a condition of strength. When men become dependent upon luxuries and assistance, they lose their physical force. When they cease to use their brains they lose their mental wings. † 1.

**Self-Protection, Prudence in.**—Every man should do something to protect himself against the stress and strain of emergencies. Some men seem to have no prudence whatever. Others have some idea of self-protection, but do not protect what is most valuable. They guard their money, fame, or pride, instead of their brains, virtue, and character. Now, when animals are providing for coming danger, they endeavor to protect not their tails, or fur, or nails, or immaterial parts. When they are not able to conceal themselves entirely from the danger, they protect their most sensitive and vulnerable portions; thus the hedgehog, in defending itself with its spines from the attack of another animal, curves itself downward in such a way as to defend its head. And some animals, when struck, roll

themselves together and press their heads on their breasts, at the same time trying to protect them by covering them with the fore legs.

P.

**Self-Sacrifice.**—Not uncommonly we read in biographies and elsewhere eloquent panegyrics on the bravery of warriors and others on occasions when they have risked their lives for their fellows. It may raise our conceptions of the lower creation to remember that some other existences manifest a self-sacrificing devotion equal if not superior to our own. Look at the manatees. The manatees (*Manatus*) collect together in large troops. Their character is mild, affectionate, and sociable. The male, which is extremely attached to his female, does not desert her in the hour of danger, but defends her till his death. The young ones have no less tenderness for their mother. The fishermen know how to profit by the ties which unite all the members of the family. They try, above all, to capture first the females, because the males and the young ones follow them, to defend them, or to share their fate. On the shallow weedy shores round islands at the mouths of rivers, which these innocent and mild animals frequent to feed on the seaweed, are the places to look for the manatees. The hunter waits for the moment when they come to the surface to breathe, or else he surprises them in their sleep, floating with their muzzles above the surface of the water in the current. When close he throws his harpoon. The wounded animal loses its blood; this blood brings up the other manatees to the assistance of the victim. At this fatal moment, some of them try to wrench out the murderous weapon, the others to bite through the cord which the wounded one is dragging along with it, thus affording the fishermen an opportunity to massacre the whole troop. The unselfish devotion of these animals leads them on to their destruction. //

M.

**Selfish Kindness.**—Though selfish kindness is a paradox, its existence is a reality. There are people who are really kind toward us and others, but are so from no creditable motive. Father Ripa, in the account of his sojourn near the mouth of



the Ganges, tells us of a set of religionists who are very kind to all sorts of animals and insects, which they neither kill nor eat, but, on the contrary, tend them with great care. Indeed to such a pitch do they carry their kindness, that they have hospitals for lice and fleas, and pay liberally by the hour those who will allow the insects to feed on their blood. They are also most kind to sheep and cows. And why all this? Not because they possess disinterested kindness, but because they believe in the transmigration of souls, and that after death they will pass into the body of some animal more or less offensive according to the good or evil actions of their past life. And further, because they believe after death that a great river must be passed which can only be done by holding on fast to the tail of the sheep or the cow. So that in this, as in a number of other instances to be met with in civilized society, there is really a complete absence of real unselfishness in the act, which, however, may be kind enough in its way. Here we have the expectation of some future advantage as the actual basis of the act. Numbers of deeds which pass for genuine kindness are the result of a complex mixture of motives, among which pure charity is not found. Where is the kindness which lends, which does, and which gives, expecting nothing as reward in return either in this world or the other?

ME.

**Senses, A Conflict between the.**—It is not wise to rely absolutely upon the decision of one of the senses alone, for it may be in conflict with that of another of the senses whose judgment may happen to be better. Take an instance. In the Island of Borneo there is a forest-tree as large as an English elm, which produces a highly esteemed fruit called the durian. Though this fruit has a smell like that of putrid flesh, so that a single specimen is enough to infect a whole house, its flavor is so delicious that those who venture to taste it soon become confirmed durian-eaters. Here the sense of smell would reject that which the taste approves, and which is a very useful fruit.

C. M.

**Sensibility, Blunted.**—The leaves and branches of a sen-

sitive plant shrink from the touch; but on being too frequently approached, this delicacy departs. Even so a sensitive nature may lose its beautiful characteristic by unsuitable contact with the world. u.

**Sensual Pleasures.**—The dog's-bane (*Apocynum androsaemifolium*), a native of North America, is most cruelly destructive of animal life, and generally conducive to the death of every fly that settles upon it. Allured by the honey on the nectary of the expanded blossom, the instant the trunk is protruded to feed on it, the filaments close, and catching the fly by the extremity of its proboscis, detain the poor prisoner writhing in protracted struggles till released by death, a death apparently occasioned by exhaustion alone; the filaments then relax, and the body falls to the ground. # Here is an emblem of sensual pleasures: their attractiveness to the senses, and the punishment of him who is allured by them. jo.

**Sensuality, The Valley of.**—In Java is a valley which is called the Valley of Poison. It is an object of veritable terror to the natives. In this renowned valley the soil is said to be covered with skeletons and carcasses of tigers, of goats, and of stags, of birds, and even with human bones; for asphyxia or suffocation, it seems, strikes all living things which venture into this desolate place. # It illustrates the valley of sensuality, the most horrible creation of social life. Few men who enter into its depths survive long; for it is strewn with dead reputations and the mangled remains of creatures who were once happy. w.

**Severe Afflictions Require Strong Remedies.**—A crowd of facts might be related to show that the more severe a symptom such as pain, the stronger must be the dose of the remedy # which is to call back the vital power to its wonted channels. Thus a delicate woman will take with impunity one hundred and fifty drops of laudanum to relieve severe pain, whereas if she were well such a dose would so attract the vital power to the part it lodged in as to make her ill, if even it did not prove fatal. The principle that severe affliction requires a strong remedy is true in politics as well as in therapeutics. We some-

times hear legislation objected to on the ground that it is "exceptional." This is obviously a very silly objection to urge where the symptoms calling for the legislation are severe. Severe national suffering demands strong palliative remedies. The point to consider is simply whether the "exceptional" legislation is, like the laudanum in the case of pain, adapted to meet its end. Of course such "exceptional" legislation as would provide a cart-load of toothpicks to ameliorate a famine is altogether outside that definition.

S. L.

**Sham Humility.**—There is an insect which may be easily mistaken for dust, or the particles of wool and silk which one sees in the corners of badly swept rooms. It walks slowly in the dust and with measured tread. Having taken one step forward it stops awhile and then takes another, leaving at each movement the opposite leg in repose. If you take off the cloak of dust in which it disguises itself, you will see an entirely different animal. It is nothing but the pupa of *Reduvius personatus*, a species of bug. And it assumes this disguise to enable it to approach little animals, such as bedbugs, flies, and spiders, in order to make them its prey. When fully developed it takes wings, flies by night, inflicts the most painful of wounds even on men—wounds which cause such a numbness in the member wounded as to lead to the belief that venom is secreted in the creature's long beak. Does not the spirit of this little wretch seem to belong to The Brotherhood of Sham Humility? Who has not noticed one of the human members of this guild crawling stealthily along in social dust and ashes, a "Uriah Heep," assuming a humble attitude in order to prey upon very small victims? Who has not observed the same humble brother when he has become fully developed, and able to fly high? Does not he, like this bug, delight to soar through darkness toward his superiors, and cannot he too inflict a nasty, poisonous sting?

I.

**Shrewd Men.**—The shrewd man reminds us of the red-headed woodpecker. From the statements of Wilson, this bird would appear to be a great epicure in the matter of fruit, so

constantly selecting the best, sweetest, and ripest apples for his own consumption that his presence upon an apple-tree may always be taken as a proof that its fruit is the best in the orchard. When alarmed, says Wilson, he seizes <sup>the best</sup> a capital one by sticking his open bill deep into it, and bears it off to the woods. When we find the shrewd man dealing in a particular stock, or speculating in a particular fund, we well know by his very presence and connection with them, that the stock and the fund are the best of their kind anywhere to be found. And if any panic or alarm does force him into other directions, depend upon it that he, like the red-headed woodpecker, will be certain to carry off something substantially good for any trouble he has taken. They are interesting, these quick, shrewd men, who always know the best market and the best way of getting on in life; these commercial woodpeckers also know where to find and how to fly off with the golden apples of the world. N. H.

**Silent Work may be Stupendous.**—The mechanical power exerted in silence by the air and the sun in lifting water from the earth, in transporting it from one place to another, and in letting it down again, is inconceivably great. The utilitarian who compares the water-power that the Falls of Niagara would afford if applied to machinery is astonished at the number of figures which are required to express its equivalent in horse-power. Yet what is the horse-power of the Niagara, falling a few steps, in comparison with the horse-power that is required to lift up all the water that is discharged into the sea, not only by this river, but by all the other rivers in the world, as high as the clouds? The calculation has been made by engineers, and according to it the force for making and lifting vapor from each area of one acre that is included on the surface of the earth is equal to the power of thirty horses; and for the whole area of the earth it is eight hundred times greater than all the water-power in Nature. If we turn for a moment from considering the stupendous work performed in silence by mechanical forces, and investigate that which is accomplished, without noise, by moral and intellectual power, we shall find

still more striking phenomena. The mere influence of ideas has permeated whole nations, crossed seas, and revolutionized the institutions of mankind. A single book may contain a silent force of thought which will move the hearts and rouse the armies of a continent.

T.

**Silent Aggressive Forces, The Achievements of.**—The chemical action of the atmosphere (composed of oxygen, nitrogen, and carbonic acid) is observable less or more on all exposed surfaces. Its gases, partly by their own nature and partly by the moisture diffused through them, exert a wasting or *weathering* influence on all rocks—softening, loosening, and crumbling them down, to be more readily borne away by currents of winds and water. Carbonic acid acts specially on all rocks containing lime; oxygen rusts or oxidizes those impregnated with iron; moisture insinuates itself everywhere, and thus in a few years the hardest rock exhibits a weathered or wasted surface. Particle after particle is loosened; film after film falls away; a new surface is exposed to new waste, and in course of ages the boldest mountain mass yields to this silent and almost imperceptible agency. In such instances as the above the atmosphere acts directly as a chemical agent; where it impregnates rain and other water with its gases, and these operate within the crust as springs, it acts indirectly, though not less efficiently. Such are some of the many achievements of aggressive forces that are silent in their action.

AD.

**Simulated Unity, The Snare of.**—One of the basest tricks played alike by men and brutes is that of simulated unity. The trickster leads his victims to suppose that he is one of themselves. An Arctic fox, on discovering a flock of sea-gulls sitting about the shore, approaches them backward, with his tail so raised as to resemble one of themselves, and as it is commonly white, and he advances with slow steps, they seldom discover the intrigue until he has reached them, when he is sure to seize one of them for his prey. There are rogues called informers, who have joined political associations by practising a sort of fox's trick of simulated unity with the assembly, and

who thereby have been enabled to cause the destruction of their victims. There are self-seekers who have ingratiated themselves into the society of good people by simulating a resemblance to them, and then have ruined their innocent dupes. Churches and chapels are often visited by hypocritical foxes, who imitate the ways of the unsuspecting gulls of the congregation, and simulate a unity with them, simply for the purpose of ruining them. Beware of the fox everywhere !

R.

**Sin's Insidious Attack.**—What a suggestive analogy there is in the contrast between a human being grappling with sin, into which he has unexpectedly drifted, and the struggling swimmer in contact, in our seas, with that formidable creature, the *Cyanea capillata*. It is a delightful day, and all seems safe to the swimmer. But, with its broad tawny festooned and scalloped disk, often a full foot or even more across, the *Cyanea capillata* flaps its way through the yielding waters, and drags after it a long train of ribbonlike arms and seemingly interminable tails, marking its course when the body is far away from us. Once tangled in its trailing ‘ hair,’ the unfortunate man who has unintentionally ventured across the graceful monster’s path too soon writhes in prickly torture. Every struggle but binds the poisonous threads more firmly round his body, and then there is no escape ; for when the winder of the fatal net finds his course impeded by the terrified human being wrestling in its coils, he, seeking no combat with the mightier biped, casts loose his envenomed arms and swims away. The amputated weapons, severed from their parent body, vent vengeance on him who has caused their destruction, and sting as fiercely as if their original proprietor itself gave the word of attack.

N. H.

**Sins, The Growth and Action of Besetting.**—A secret sin works insidiously, but with wondrous, quiet power. Its hidden ravages are awful, and the outward revelation of their result and existence may be contemporaneous. Until that revelation was made, probably no one ever suspected the presence in the man of anything but a few venial faults which were as

mere excrescences on a robust character—though these growths were something rude. Oftentimes a large fungus will start from a tree, and in some mysterious manner will sap the life-power of the spot on which it grows. They were like that fungus. When the fungus falls in the autumn, it leaves scarcely a trace of its presence, the tree being apparently as healthy as before the advent of the parasite. But the whole character of the wood has been changed by the strange power of the fungus, being soft and corklike to the touch. Perhaps the parasite may fall in the autumn, and the tree may show no symptoms of decay; but at the first tempest it may have to encounter, the trunk snaps off at the spot where the fungus has been, and the extent of the injury is at once disclosed. As long as any portion of that tree retains life, it will continue to throw out these destructive fungi; and even when a mere stump is left in the ground, the fungi will push themselves out in profusion. H.

**Slanderer, The Wounds of the.**—The scorpion extends in Europe to the north coasts of the Mediterranean, but is more abundant in Africa, both North and South, where its bite has the singular peculiarity that, although excessively painful on the first occasion of its infliction, and even dangerous to life, the constitution becomes hardened to it, the suffering is less on every subsequent occasion, and at length comes to be little regarded. The slanderer is found in every part of the globe. The wounds which he inflicts upon sensitive natures have been fatal in many instances. But in cases where the victim has been strong enough to endure several of his attacks, it is found that, like the scorpion's bites, they produce no effect; and the slanderer and his venom are even held in derision. I. L.

**Slanderos Character, The.**—The medusæ are so named in consequence of the long fibers which are trailed after them, and which writhe and twist about in the water like the serpent tresses of the mythical Medusa. Some of the tropical species of medusæ are so poisonous that if their floating tresses coil round a human being they affect him as if he had been stung from head to foot by a swarm of wasps. In the colder seas

of the British shores these formidable beings cannot live; but even on those coasts a peculiarly venomous species exists. Its scientific name is *Cyanea capillata*, and it is popularly called the ~~stinger or stanger~~ <sup>Portuguese name of Ulaia.</sup> The poison-threads of this species are apparently interminable, and people are stung by them when at a distance of many yards from the owner. Moreover, the threads sting as freely when separated from the medusa as when attached to it; so that a single specimen may inflict an enormous amount of pain if it should happen to float among a company of bathers. The effect of the poison varies according to the individual. Some persons care little for it, and suffer scarcely any pain, except a sharp sort of pricking sensation which is unpleasant at the time, but leaves no sort of after-effects. Others, who are afflicted with a sensitive skin, not only suffer severe and prolonged pain, but their health is seriously affected, and months afterward the effects are felt, and the symptoms will recur. This stinger symbolizes the slanderer. She trails herself through human society in all latitudes; and wherever she is found she causes pain by her poison. Even when far away her victims suffer through her influence. Those who are not particularly sensitive cannot escape the discomfort of her stings; while those who are so often suffer acutely from them.

F.

**Small Beings, The Capacity for Mischief Possessed by.**—The feeble aphid, with limbs indescribably slender, is so fragile that it may be overturned by a puff of breath. But smallness of bulk is no criterion of inferiority of power; an apple-tree, several feet, perhaps, in its circumference, spreading its branches over a rood of land, sickens and dies from the puncture of the *Aphis lanata*, a creature so small as to be imperceptible on its limbs. Among men we often see a grand and noble character brought to a premature grave owing to the capacity which some of the most contemptible of the human species possess to blast reputations and break hearts. †

J.

**Small Things, The Day of.**—When the day of small things is being smiled at, the question may be advantageously



asked, Whether the small things are the germs of the great, or are preparing the way for them? In an immense number of instances in the political, the moral, and the material world, it will be found that the "little" things have been marvelously potential; vigorous in themselves, though in their day appearing weak; tremendous in their results, though originally indicating no future force. The thallogens are, many of them, of minute microscopic dimensions. Nevertheless they fulfil an important part in the economy of Nature. They constituted the first origin, and were even the source of all vegetation. Disaggregating rocks, they produced the vegetable earth which became the means of their own destruction. The enriched soil nourished plants of more complex organization, and these inferior beings were replaced by degrees by vegetable species of more perfect structure. All soil primitively sterile, all land recently emerged from the bosom of the waters, served first as the asylum of crustaceous and foliaceous lichens; at a later period lichens and ferns made their appearance there; finally a superior vegetation, namely, the phanerogams, or cotyledons, present themselves. Thus the higher orders of vegetables have only appeared, and will only continue to make their appearance, upon the *débris* of vegetation of a lower order. v.

**Small Natures, Paltry Battles of.**—The common stickleback, or tittlebat, as it is sometimes called, is a most irritable and pugnacious creature. Sometimes a rival male comes by with all his swords drawn ready for battle, and his colors of red and green flying. Then there is a fight that would require the pen of Homer to describe. These valiant warriors dart at each other, they bite, they manœuver, they strike with their spines, and sometimes a well-aimed cut will rip up the body of the adversary and send him to the bottom dead. When one of the combatants prefers ignominious flight to a glorious death, he is pursued by the victor with relentless fury, and may think himself fortunate if he escapes. Then comes a curious result. The conqueror assumes brighter colors and a more insolent demeanor, his green is tinged with gold, his scarlet is of a triple

dye, and he charges more furiously than ever at intruders or those whom he is pleased to consider as such. But the vanquished warrior is disgraced ; he retires humbly to some obscure retreat, he loses his red-and-green-and-gold uniform, and becomes a plain civilian in drab. C.

**Sneakism.**—Unfortunately there is a good deal of sneakism to be found in society ; but as it is not polite to give any example painted from life, we may have a very coherent notion of the spirit of the offense if we notice that embodiment of it which is to be seen in the lion-worm. The lion-worm is a curious and voracious little creature, having a tapering form, the head being more pointed than the tail. Like the ant-lion, that formidable insect, it makes a species of cavity in the loose earth, and there waits in ambuscade for its prey. A portion of its body lies concealed under the sand ; the rest stretches across the bottom of the den, and appears so stiff and motionless that at first sight it might be taken for a bit of straw, half an inch in length. If, however, any insect in search of food should happen to walk into the cave of the lion-worm, the little morsel of stubble in an instant becomes all animation, falls like a serpent on its prey, and, winding its body in coils around its victim, compresses it to death, and sucks out the juices by means of a couple of hooks fixed to its head. No one can observe these actions without coming to the conclusion that sneakism in men or worms is just the same thing, with merely a change of method and appliances suitable to the place and occasion. P.

**Social Character, Traits of.**—Considerable variety exists in the mental characters not only of men but of different mollusks. One mollusk, apparently like the anchorite, loves to dwell alone, another prefers society, a third associates only with his clan. He cannot endure the neighborhood of creatures formed like himself, with similar necessities and inclinations, if they differ in even a few immaterial points. P. H.

**Social Skunks.**—The skunks (*Mephitis*) inhabit North and South America, and are remarkable for the horrid stench which they diffuse around them when provoked. The effluvium no

living creature can endure even at a considerable distance. Even clothing is rendered unwearable. Among mankind may be found social skunks—individuals who, whenever the least annoyed, make the moral atmosphere so utterly offensive that even robust honesty (however desirous of vindicating itself) is compelled to withdraw. So detestable is the effect which these fellows produce that a moral fumigation of all that has been near them does not absolutely remove all traces of their rascaldom; and years after, coming into contact with them, a reference to even trivial circumstances which have been tainted by their association will produce nausea.

M.

**Social Life, Inequalities in.**—The inequalities of society are startling. The social strata are irregular, full of faults and breaks. We cannot account for the singular social position of some men any more than, when we are examining rocks, we can account for the juxtaposition of worthless stone and valuable ore. We find that ores of the useful metals have been sometimes thrown down in a fissure at one time and not at another; the deposit of one ore sometimes repeated, at others not. Thus there may have been a coating of a zinc ore at one time, of copper ore at another, and a covering of tin ore upon these, sometimes separated by other mineral substances, at others in deposits one above the other. Again we find in the successive dislocations which are sometimes seen to have effected the lines of fissures, that while the lines of least resistance to the applied force have been chiefly through the contents of the original fissure, occasionally a new fissure has been made through portions of the adjoining rock, so that the minerals which may have been subsequently deposited in the new crack or fissure will be partly in the old line and partly amid the newly broken and adjacent rocks. The rocks very fairly represent social life. Revolutions and reactions—the conflicting operations of the court and the populace, the priests and the people, each sometimes gaining and each sometimes losing the ascendancy—have jostled men into curious positions. Men utterly different in their nature are in closest contact; and

those whom you would often look for at the top are at the bottom, the man of tin being where you hoped to discover him of gold, and all being strangely mixed up with the world's dross and rubbish. The processes by which all this came to pass are no doubt ascertainable; but, as in the case of the rocks, exceedingly difficult just at present. So we must accept the fact, and await in confidence the explaining day. MA.

**Social Elevation Perilous to Some.**—It is not every man who can live on the elevated places of society. The social mountains are incompatible with the organizations intended to thrive down in the plains of commonplace life. The magisterial mountain, the political mountain, the religious mountain, furnish many examples of the curious phenomena which have been developed in certain of the vulgar tribes which have endeavored to flourish on their inviting heights. We have all our own places in creation, and are only safe when we are keeping them. It is so with men, it is so with animals. Some animals which flourish well and happily in the plain become ailing or die on the mountain. For example: Von Tschudi makes the singular remark that on the Cordilleras, at elevations of more than twelve thousand feet, delicate breeds of dogs and the European domestic cat are exposed to a particular kind of mortal disease. Humboldt records that innumerable attempts have been made to keep cats as domestic animals in the town of Cerro de Pasco, lying at an elevation of fourteen thousand one hundred feet above the sea's level; but such endeavors have invariably been frustrated, as both cats and dogs have died in convulsions at the end of a few days. The cats, after being attacked by convulsive fits, attempt to climb the walls, but soon fall to the ground exhausted and motionless. Lord Bacon says of little men in high places, that they resemble small busts on tall pedestals, and are the more ridiculous on account of their elevation. So they are. But they are also, like these cats and dogs on the mountain heights, quite out of their sphere; and the attempt to elevate them, however well intended,

is often a fatal blunder. Keep the cats and dogs of society where they can live.

VI.

**Social Gullibility.**—There is in society a gullible class—a people who will snatch at any absurdity and swallow any nonsense. [If only a proposal or an institution assume a phase resembling a thing which they approve, they mistake the resemblance for the thing, and are ready to act upon their mistake even at the cost of the greatest inconvenience.] There are many animals in the world like them. The trout and salmon rise at any artificial fly, and the pike snaps greedily at the glittering metallic bait. The deer, deceived by a pair of horns held above a bush which the Indian hunter carries before him, allows him to approach within shot of the arrows. The edible frog, which rejects dead food, seizes a dead mouse if it be moved gently to give it the appearance of life; and the little green tree-frog, so abundant in Germany, may be fed with dead flies throughout the winter by a similar deception. Birds are scared away from fruit-trees and fresh-sown land by figures representing a human form, and are again decoyed by pipes imitating their own peculiar cries. And in this manner many animals mistake the representation of an object for the object itself, the drawing for the original. But they are not like men in the frequency with which they make the mistake. P.

**Social Isolation, The Perils of.**—The sun is necessary to health. Important changes take place in the constitution of the blood in consequence of the cutaneous vessels on the surface of the body not being freely exposed to its oxygenating and life-generating influence. It is a well-established fact that, as the effect of isolation from the stimulus of light, the fibrin, albumin, and red blood-cells become diminished in quantity, and the serum or watery portion of the vital fluid augmented in volume, thus inducing a disease known to physicians and pathologists by the name of leucemia, an affection in which white instead of red blood-cells are developed. This exclusion from the sun produces the sickly, flabby, pale, anemic condition of

the face, or exsanguined, ghostlike forms so often seen among those not freely exposed to air and light. The absence of these essential elements of health deteriorates by materially altering the physical composition of the blood, thus seriously prostrating the vital strength, enfeebling the nervous energy, and ultimately inducing organic changes in the structure of the heart, brain, and muscular tissue. (Now) that which the sun is to the body, friendship is to the soul. Wherever you find a nature withdrawn from the genial influences of friendship you will observe traces of abnormal weakness and melancholy. In the shadow of solitude man loses the ruddy glow of joyousness, and a gloomy misanthropy and sometimes mental decrepitude are apt to derange all his affections. True friendship is the sun of the soul. It stimulates, strengthens, and gladdens our whole being. †

I. L. : VIR.

**Social Life, The Undercurrents of.**—The experiments in deep-sea soundings have thrown much light upon the subject of undercurrents. There is reason to believe that they exist in all or almost all parts of the deep sea, for never in any instance yet has the deep-sea line ceased to run out even after the plummet has reached the bottom. If the line be held fast in the boat, it invariably parts, showing, when two or three miles of it are out, that the undercurrents are sweeping against the bight of it with what seamen call a swigging force that no sounding-twine has yet proved strong enough to withstand. To understand the sea, you must go below its surface, just as in social life, if you would understand the world, you must look below its conventionalities, its court ceremonies, and its respectable acts of parliament. You must take into account its undercurrents. † The "sounding-line" of any one of a hundred biographical histories will enable you to discover that the throne, the parliament, the church, and all imperial institutions are vastly influenced by a variety of undercurrents. Logic, courtesy, and religion are on the surface, but underneath them all there are bad undercurrents which sweep along with a "swigging force." †

T.

**Solitude, The Music of.**—The nightingale is celebrated all over the world for its song, which without doubt is superior to that of all other birds. Naturally shy, it retires into the freshest and most sheltered and secluded places, rarely exposing itself to observation. Brushwood and thickets, witch-elms and evergreen trees, growing on the banks of some retired water-course, are its favorite dwellings. In its seclusion it sings not only during the day but also in the night; but let any discordant noise approach its retreat and it stops instantly. It seems to love solitude above all things. The soul of the poet resembles the nightingale in this; for it is in the retirement of lonely hills and valleys, away from all the clatter of the world, that the poet becomes, as Landor says, "the serene creator of immortal things," of which he discourses in delightful spiritual melody. The soul's purest music is only heard in solitude, "far from the madding crowd."

RE.

**Sorrow Mitigating Anger.**—Dry air is a bad conductor, and favors undue electrical accumulations; but moist air is a good conductor, and drains the electricity harmlessly from the atmosphere. Each drop of rain as it falls becomes freighted with some of the superabundant electricity, and carries it off in safety to the earth. The falling torrent, moreover, soaks house, tower, and tree and shrub; and thus adds to the facility with which they conduct the fluid harmlessly from the air. Anger resembles the lightning, and sorrow the rain. So long as anger rages in its own burning atmosphere it may be dangerous, but when pathos blends with the storm and sorrow rains her tears, anger becomes controllable, and may harmlessly discharge itself in reminiscences or contrition.

BE.

**Soul Ascension.**—The frigate-bird (*Frigata*) spreads its wings to the extent of three yards, and its power of flight is, therefore, very great. When a hurricane arises it mounts up far above the storm, and remains in these empyrean regions until the tempest is overpassed. In consequence of their immense expansion of the wing they can sustain themselves in the air for days together without taking or requiring rest. The human soul,

like the frigate-bird, possesses a power to rise above its storms. Upon the pinions of faith it can ascend above the tempests of time, and calm itself in the prospects of immortality. No storms can beat it down, for it possesses a spirituality which, as Dr. Crowley says, enables it to rise higher and higher with every fresh wave of its wing.

RE.

**Soul Blossoming.**—Moments of profound faith, says Rev. F. W. Robertson, do not come once for all; they vary with the degree and habit of obedience. There is a plant which blossoms once in a hundred years. Like it, the soul blossoms only now and then in a space of years; but these moments are the glory and the heavenly glimpses of our purest humanity.

**Sound, Allured by Mere.**—The *Cicada plebeia*, or *Tettigonia fraxini*, is an insect very common in Provence, of gray-yellow below, black above; the head and thorax are marked or striped with black. M. Solier says that its song, very loud and very piercing, seems to consist of one single note, repeated with rapidity, which insensibly grows weaker after a certain time, and terminates in a kind of whistle, which can be partly imitated by pronouncing the two consonants *s*, *t*, and which resembles the noise of the air coming out of a little opening in a compressed bladder. The cicadas in general are very timid, and fly away at the least noise. However, when a cicada is singing, one can approach it, whistling the while in a quavering manner, and imitating as nearly as possible its cry, but in such a manner as to predominate over it. The insect then descends a small space down the tree, as if to approach the whistler; then it stops. But if one presents a stick to it, continuing to whistle, the cicada settles on it and begins again to descend backward. From time to time it stops as if to listen. At last attracted and, as it were, fascinated by the harmony of the whistle, it comes to the observer himself. Here, then, is another of the many instances in which a creature may be befooled by a mere sound. We have observed at church congresses, at revival-meetings, tea-meetings, electioneering gatherings, and at sundry times in divers



places, that human beings can be cajoled by the same thing. A man with an ecclesiastical wand or an electioneering wand, if he will learn his tune properly, can always bring down the human *Cicada plebeia*, and get him in his own power. 1.

**Spiritual Torpor.**—We may accept it as an axiom in physiology, that the activity of respiration is inseparably connected with vital activity ; not simply muscular activity, as some writers maintain, but all processes whatever involving chemical change within the body. The most striking confirmation of this axiom is perhaps to be seen in the phenomena of hybernation or winter sleep. No sooner are the vital functions reduced to this extremely feeble condition, in which we may almost say life is suspended, than these hybernating animals are so incapable of ordinary respiration that they may be placed in an atmosphere of pure carbonic acid, and remain there unhurt for four hours, whereas if they were placed in such an atmosphere when their breathing was going on they would instantly perish. # In the mental world there is a spiritual hybernation. The intelligence falls into a profound slumber. When it does so the mind is independent of all its ordinary requirements, and can exist in an atmosphere which is devoid of even a trace of common sense. In this state a man may be placed under the influences of even a revolting popular theology, and may manage to exist for a time, and, if spiritual death overtake him, he is unconscious both of his own position and of its approach. He is in a state of suspended mental animation which is terminated without a pang. PH.

**Splenetic Force.**—The splenetic man does not exert an influence at all commensurate with his activity or his desires. He often would be injurious if he could, but the fact is that society is not affected by all his attacks in an equal degree. Their power is in an inverse ratio to their number. It has been found by observation that the effect of the subsequent wounds which he gives, like those which the snake gives, is greatly decreased. In the case of the snake they are diminished either by the diminution of the quantity of venom, or by some deteri-

oration of its strength, so that if a venomous snake be made repeatedly to inflict wounds, without allowing sufficiently long intervals for it to recover its powers, each successive bite becomes less and less effective. In the case of the splenetic man, however, there is no diminution either in the quantity of the venom or its quality. The decrease in the noxious effects produced by his subsequent wounds is due to another source. It is owing to society's method of treatment. Society now finds that it is best not to dress such wounds, or allow them to be plastered over by friends, but to bathe them at once in oblivion.

P.

**Spurious Philanthropist, The.**—The teredo (ship-worm) passes through several changes of form, and in its earlier stages is wholly unrecognizable by any one except a practised naturalist. It is very minute and nearly spherical, and covered with cilia or hairlike projections, by means of which it swims rapidly through the water. In thirty-six hours it assumes a new form, and speedily changes it for another, after which it returns again to its original form, so that in a very few hours the little creature is first spherical, then oval, then triangular, and then spherical again. In this stage of existence it possesses a foot which enables it to crawl after the manner of snails, and also has organs of hearing and sight. It does not enjoy its locomotive powers for any long time, but fixes itself to some suitable object, passes through its last change, becomes a veritable ship-worm, and begins its lifelong task of boring. This creature reminds one of the spurious philanthropist, who passes through a strange variety of changes before he settles down to his vocation. He is tradesman, bankrupt, canvasser, collector, accountant, agent, and lecturer, and then, having merely crawled through the first part of his life, finally he passes into his last phase of existence, that of spurious philanthropist. In this stage of being he begins and ends the great work of his life, boring poor humanity in all directions in order to support himself. c. s.

**Starvation, The Obligation of Permitting.**—At the end of the season, after successive bands of the worker-wasps have

passed through the cells, and the single generation of the males and females has come to maturity, the nest shows symptoms of dissolution. Toward the remaining grubs the wasps change their behavior. Instead of feeding, tending, and defending them, they pull these helpless white things out of their cradles, carry them far out of the nest, and abandon them. It seems a cruelty, but it is a cruel mercy, substituting a quick death by exposure, or perchance being eaten by birds, for a slow and lingering death by starvation within the nest. For the instinct of the workers tells them that their labor is over, their course run, and in a short time they will all die, so that the helpless nurselings in the cells would find no food and must perish by starvation. This wonderful fact is pregnant with suggestions worthy the best consideration of magistrates, coroners, and all officials who are charged with any punitive duties in relation to men and women in a state of starvation. Those of them who adopt the Christian faith in its integrity are entitled to say that, human life being sacred, men must not under starvation behave like the wasps. But those officials who do not believe in the sanctity of human life, but consider it to be of the same value as that of the brute or insect, may pause and consider a little before they punish men and women for committing acts like those of the wasp, and which are prompted by the same instinct. Moreover, all magistrates, whatever their creed, should remember that there are ignorant unsophisticated men in the world whose actions are prompted only by natural instinct, and who have never been instructed by conventional opinion. If such men are brought before a court of justice, they are entitled to be considered with something of the leniency which we feel toward the wasp. If in theological ignorance they followed their only guide, their instinct, that fact should be weighed when punishment is being meted out to them. It requires more than natural instinct to prompt man to comprehend the moral duty of watching the starvation of his offspring when there is at hand a short cut to its extinction. H.

**Statesmanlike Insensibility.**—It is very remarkable that

some fishes can subsist, apparently in health, in water sufficiently heated to boil them if dead. Broussonnet found, by experiments, that several species of fresh-water fishes lived many days in water so hot that the human hand could not be held in it for a single minute. Saussure found living eels in the hot springs of Aix, in Savoy, in which the temperature is pretty regularly 113° Fahrenheit. But still more extraordinary are the facts recorded by Humboldt and Bonpland, who saw living fishes, apparently in health and vigor, thrown up from the crater of a volcano in South America, with water and hot vapor that raised the thermometer to 210° Fahrenheit, a heat less by only two degrees than that of boiling water. The equanimity with which these slippery creatures bear "getting into hot water" reminds us of the statesman's insensibility to the heated turmoil of public indignation. We have seen many glib specimens, hurled forth from their places by explosions of righteous opinion, float about quite comfortably in currents of popular fury which we should have thought would annihilate them. They disregarded the irony of circumstances, and preserved their slippery egotism under all conditions. RO.

**Sterility, The Dreariness of.**—The districts of the pampas stretch northward to the spurs of the Andes, and consist of a sandy soil, free from salt, but wholly unproductive. These solitudes, however, are plowed by running streams, none of which communicate with the sea. They descend from the Andes, traverse the pampas from east to west, and empty themselves into the saline lakes. Somewhat farther to the north, and nearer the equator, lies an almost unknown region of salt—a region of indescribable gloom, where neither tree, nor bush, nor blade of emerald grass delights the eye. Eighteen months frequently elapse in this land of desolation, worthy of being one of the circles in Dante's "Inferno," without the cheering sound of a shower of rain; and when at length it arrives, it splits the rocks of salt, and melts them into wide pools of brackish mud. As soon as the sun has absorbed the excessive humidity of the

soil, myriads of soft crystals glitter on the surface, and convert the desert into one immense mirror. D.

**Stings, The Philosophy of our.**—The prick made by so fine a point as that of the sting of the gnat (*Culex pipiens*) ought not to cause any pain. "The point of the finest needle," says Réaumur, "compared to the sting of the gnat, is the same as the point of a sword compared to that of the needle." How is it, then, that so much suffering is caused by a sting? It is because the prick has been imbued with that which, while it appears like a mere drop of very clear water, is an intensely irritating liquid. It is the insertion of this which inflames us. We notice some resemblance between this process and that which is going on when our moral nature is wounded by an acquaintance. It is not his little word which grieves our soul. It is the essence of malignity which, by its means, he distils into us. A look, a sneer, a tone, a gesture, are in themselves quiet, unappreciable factors in rousing a riot among the emotions, but the venom which they subtly convey is capable of causing suicide or inducing madness. 1.

**Subjection, Easy.**—The ass, like the horse, was originally imported into America by the Spaniards, and afterward by other nations. In its natural state this animal is swift, fierce, and formidable. When attacked they defend themselves with their heels and mouth with such activity that without slackening their pace they often maim their pursuers. But the most remarkable property in these creatures is, that after carrying their first load their celerity leaves them, their dangerous ferocity is past, and they soon contract the stupid look and dullness peculiar to the asinine species. There are men who, in their constitution and history, resemble this animal. A man of this caliber in his married life and public career, or under the pressure of any troubles, always begins and ends in one never-varying way. He is first showy, pretentious, vociferous, and affects a vast amount of resisting force; but as his manhood is only a resemblance to a thoroughbred man, he is soon quelled. A

wife, a priest, or a tyrant places the load well on his back, and all his courage departs forever, and in dull submission he will continue to pace in perfect obedience to the bridle of authority.


A.

**Subterfuges the Resort of the Overpowered.**—Weakness often resorts to dissimulation for artifices of defense. But unless overmatched, strong men and strong animals do not defend themselves by tricks. The stag, being utterly unequal to cope with his powerful enemies, illustrates the tendency of the weak to resort to subterfuges for defense. His intelligence is shown chiefly in the arts by which he endeavors to escape when pursued. In order to deceive the hounds, he will return twice or thrice upon his former steps. He seems aware that he is followed by the scent, and will try, as he flees, to excite hinds or younger stags to come after him, and draw off the dogs from his track. If he succeed in this attempt, he will often spring away in a side-course, and sometimes lie down on his belly, as well to rest as to conceal himself. It is not till he has exhausted all his artifices that he goes into the water to cut off the scent.

R.

**Success a Constitutional Trait.**—The fork-tailed date-shell (*Lithodomus caudigera*) is able to bore into the hardest stones and stoutest shells, which are found pierced by hundreds of these curious beings. They seem to have one prevailing instinct, namely, to bore their way through everything. Onward, ever onward, seems to be the law of their existence, and most thoroughly do they carry it out. There is not any particular credit due to them, for they merely obey a blind instinct, and their success in their borings is a constitutional trait. There are men born with the same instinct which the occupant of this shell possesses. As a result, they are as successful as those born without it are unsuccessful. They need not brag about their achievements. The whole explanation of them will be found in the fact that Nature arranges matters by law and not by luck. Their success is simply owing to their constitutional trait. It has no more eccentricity, says Emerson, than the gingham or muslin we weave in our mills.

11.

**Sudden Death and Immediate Burial an Old Law of Nature.**—It has been remarked, and truly, that many of the fish and saurians, found fossil in the lias, must have met with sudden death and immediate burial, and that the destructive operation, whatever may have been its nature, was often repeated. Sometimes, says Dr. Buckland, scarcely a single bone or scale has been removed from the place it occupied during life, which could not have happened had the uncovered bodies of these saurians been left, even for a few hours, exposed to putrefaction and to the attacks of fishes and other smaller animals at the bottom of the sea. Not only are the skeletons of the ichthyosaurs entire, but sometimes the contents of their stomachs still remain between their ribs, so that we can discover the particular species of fish on which they lived, and the form of their excrements.  E.

**Sunbeam, Physical Forces in the.**—The strength of evidence appears to be in favor of considering light, heat, and actinism as three distinct principles or powers active in regulating the great phenomena of Nature. In the sunbeam these powers are balanced against each other, and thus are determined those differences of climate which are not influenced by the physical conformation of the earth's surface. It has been proved by well-conducted observations that with variations of latitude there are variations in the relations of these three principles. In the temperate regions of the earth the actinic power is active; as we advance to the tropics, where heat increases, and

“The sun shines forever, unchangeably bright,”

the chemical power is weak. The photographic picture which could be taken in New York in a second or two could not be obtained within the tropics in less than a quarter of an hour. It often happens, indeed, that prolonged exposure under a blazing sun is insufficient to produce any chemical change. Everything appears to favor the view that the distribution of plants and animals on the surface of the earth is regulated by the balance of physical forces in the sunbeam. In the seasons we

detect the same influences at work. Actinism or chemical power is greatest in the spring; as the bright light of summer advances, the power of the solar rays to produce any chemical change is diminished; and as we advance to autumn, the peculiar heat-rays come more evidently into action. I. L.

**Superstition the Protector of Monstrosities.**—The Natal rock-snake (*Natalensis*) is described by Sir Andrew Smith as being gigantic in size, he having seen a skin measuring twenty-five feet, although part of the tail was absent. It feeds, he says, on small quadrupeds, and for some days after swallowing one it remains in a torpid state, when it may be easily destroyed. Of this opportunity, however, the South Africans never avail themselves; they have a horror of the reptile, but believe that it has an influence over their destinies, and affirm that no one has ever been known to kill one and prosper. Thus does superstition ever deal tenderly with all monstrosities. Whether she has to deal with a snake, a creed, a tyrant, a throne, or a fable, she always exhibits the same silly horrors of freeing herself from them. It is her firm belief that monstrosities have power, with heaven, to affect human destiny for good and evil. RE.

**Suppletory Elements.**—For an extended idea of the value of suppletory elements we may look at Nature's metalliferous laboratory. We observe that when strength is wanted we have the giant iron at our beck and call. An obdurate, unwieldy servant in his rougher shapes, we tame him through fire, and make his dull force yield to our skilful weakness. Powerful in our knowledge, we summon this metal to sustain our houses and bridge our rivers, and we bend and roll, and twist and fashion it as we please for a thousand useful purposes. Do we want a medium to help on commerce by superseding clumsy barter? There is gold. Is heaviness required? It is to be found in platinum. Or lightness? There is aluminium. Or softness? There is lead. Or brittleness? There is antimony. Or fluidity? There is mercury. While for a combination of many qualities useful in domestic life there are copper and tin. One metal appears to have been created to supplement the de-



ficiencies of another. Thus iron, strong though it be, yields to the gnawing attacks of air and moisture. But by sheathing it in a film of zinc or tin—metals which, though comparatively weak, are yet less sensitive to air and moisture—iron gains the priceless quality of endurance. By the skilful union of various other metals in different proportions, the chemist knows how they may be adapted to almost every purpose. In the various departments of human activity we may also observe the vast advantages of supplemental forces. The dreams of the poet are balanced by the acts of the statesman. The creations of the painter are strengthened by the sermons of the preacher. The fire of the orator is tempered by the wisdom of the philosopher. The enthusiasm of the mob is controlled by the serenity of law. These forces are all intrinsically good; and that good is fortified by reason of the fact that, being suppletory, they all strengthen each other.

BE.

**Susceptible Character, The.**—The witch-elm manifests the approach of winter earlier than any other tree. It becomes ruined and denuded by a touch of the frosty air, and contributes no splendor, no beauty to autumnal scenery, as its leaves curl up, become brown, and flutter from their sprays, as early, when growing in exposed situations, as the middle of September. This character of itself marks a difference from the common elm, which preserves its verdure, except from accidental causes, long after this period, and with a fine, mellow, yellow hue contributing a full share with other trees to the character and splendor of autumn. The witch-elm is an emblem of the susceptible, tender human character. The soul of such a man is highly sensitive to all external impressions. The first frosty touch of a great sorrow shakes his life to its center. Men of a more robust type are chastened by sad events; and, mellowed by checkered experiences, live on to the tranquil maturity of their existence. But he, unfortunately, cannot face the rough blasts of adversity, and perishes at once under their cruel, chilling influence. Even the cold breath of slander sometimes bears for him a sentence of death.

J.

**Suspense Inimical to Work.**—We can bear the worst better than we can bear the apprehension of the worst. A state of suspense is inimical to the performance of work. Bees seem like us in this respect. When they are foraging in the country, the appearance of a single cloud before the sun causes them to return home precipitately. They apprehend rain, which they much dislike. However, if the sky is uniformly dark and cloudy, and if there are not any sudden alternations of darkness and light, they are not easily alarmed, and when gentle rain actually does come, it hardly drives them away from their hunting-ground. The reality turns out to be less hostile to their work than the suspense preceding it. 1.

**Suspicion Sometimes the Child of Self-Knowledge.**—The habit of laying traps for other animals by the monkey tribe makes them very cautious of being entrapped themselves. No snare, how nicely bated soever, will take the monkey of the West India Islands. The monkey, being full of tricks and cheating himself, supposes every other creature to be so likewise. Very fraudulent men are always the persons who are most suspicious of others. The greatest rascals are the greatest suspects. Like the monkey, they are on the lookout for "traps"; and like him, they often think they see one when there is nothing of the kind. A.

**Sweet Disposition, The.**—Most persons are considerably affected by the circumstances which surround them, and their disposition is either soured or sweetened by their influence. But there are some few who are born with a sweet disposition, which seems an indestructible essence. It is not developed by good fortune, or destroyed by adversity. They are like the violet, which as a literal fact all the culture of the world has never been able to improve, and which is as lovely and sweet-scented in the wild bank and in the wood as in the most splendid borders of palace gardens. B. F.

**Sycophant's Ascendancy, The.**—The stem of the ivy is furnished with rootlike suckers which insinuate their spurs into the bark of trees or on the surface of a wall. Who has not

seen with regret some noble ash-tree covered with ivy, in whose embrace it rapidly yields up its life? Surely the root is draining the tree of its sap and transferring it to its own veins. # Thus does a sycophant gradually extend his influence over a patron until the manliness of that patron succumbs to his ascendancy: The hero is ruined, and the flatterer flourishes in his place. Beware of the insinuating aptitudes of the parasite! Let him, like ivy on a wall, keep his proper situation. Protect a noble nature from his advances. v.

**Sympathy.**—Sympathy for each other in suffering is not confined to mankind. There is one trait, says Mr. Jesse, in the character of <sup>rooks</sup> ~~rooks~~ which is, I believe, peculiar to that sort of birds, and which does them no little credit. It is the distress which they exhibit when one of them has been killed or wounded by a gun while they have been feeding in a field or flying over it. Instead of being scared away by the report of the gun, leaving their wounded or dead companion to his fate, they show the greatest anxiety or sympathy for him, uttering cries of distress, and plainly proving that they wish to render him assistance by hovering over him, or sometimes making a dart from the air close up to him, apparently to try and find out the reason why he did not follow them:

“ While circling round and round,  
They call their lifeless comrade from the ground.”

If he is wounded, and can flutter along the ground, the <sup>rooks</sup> ~~rooks~~ appear to animate him to make fresh exertions by incessant cries, flying a little distance before him, and calling to him to follow them. R.

**Sympathy, The Law of.**—Sympathy, as Edmund Burke has well said, may be considered as a sort of substitution, by which we are put into the place of another man, and affected in many respects as he is affected. And by the operation of the law of sympathy, Coleridge declares that all powerful souls have kindred with each other. But no words of description can convey so good an idea of this mystic power, and of its work-

ings, as we may obtain by looking at its emblem, the *Mimosa sensitiva*—the sensitive plant. As a friend feels for a friend, so each of its leaves seems to feel for the others. Who that knows, who that has seen it, has not also remarked the strange sensibility of its leaves? The slightest touch suffices to make its folioles close upon their supports, the petiolar twigs upon the common petiole, and the common petiole upon the stem. If we wound the extreme end of one foliole, the others immediately approach in succession, like friends who come to share in suffering or death. The irritation is not local, but communicates from circle to circle in the various elements of a leaf, and propagates itself from one leaf to another, like sympathy in an association of true friends. The more vigorous the sensitive plant is in its habit, the more susceptible is it; for sympathy everywhere (unlike sentimentality) is always most powerful in the noblest organizations. v.

**Sympathy, The Human Soul Seeks the Face for.**—The human soul seeks the face for sympathy, as if constituted for that sociality only through that medium—the living telegraph of all that is felt within. So strong is this disposition to look into the features for fellowship, that even a blind man, when excited by the voice of a friend, seems to see the accompanying expression of his face. Those who have had opportunity of observing the attitude of an intelligent blind person, while in lively conversation with him, can testify to the force with which his features respond to every word. He seems to watch you with his sightless face, and to look through the whole of it into your eyes. Holman, the blind traveler, says: “When any one is conversing with me, I conceive myself to see the expression of countenance as the words are pronounced, almost as if I actually saw it, and in ordinary cases receive a similar kind of satisfaction.” u.

**Tact is Superior to Force.**—When the hawk is soaring above the court, scarce discernible to human eye, the pigeons have already perceived him; and if no hiding-place is to be found, the whole flock arise and career upward in close circles.

Faster and still faster the entangled maze goes round, in order to confuse the marauder. He swoops down and misses his prey, for look and blow have grown uncertain. He makes another, and a third attempt, but in vain; there is nothing left him but to retreat discomfited. Their tact thus saves the pigeons from being the prey of this stronger bird. How often have men of tact saved themselves by tact alone from powerful foes! ST.

**Temper, The Equable.**—Do not be elated by prosperity; do not be chilled by adversity. Let not external circumstances regulate your demeanor; but let them be governed by your strong will acting under a sense of what is right. Your temper will then be equable, as it should be. Just look at the plants. One of their most mysterious properties is that of regulating their temperature. The twigs of the tree are not frozen through in winter, neither does their temperature mount up in summer in proportion to the external heat. Their vitality protects them equally from both extremes; and when you are yielding too much to mere external influences, just think of this. BE.

**Temperament, The Equable.**—Some men are blessed with that temper which is equal and uniform at all times. The violence of wrath never heats them, and the disappointments and vexations of life fail to chill the even geniality of their disposition. The thermometer of their temper rises and falls only within the most limited range, and therefore you can always calculate upon the presence of all the products of calmness, and the absence of the vices which are incidental to characters which are less benign. As with men, so with climates. Some countries are fortunate in the enjoyment of a climate exempt from remarkable vicissitudes of temperature; there are no sudden transitions from heat to cold, nor does the summer differ much from the winter. Here it is natural to expect that animal and vegetable life will flourish, and that diseases connected with atmospheric changes will be few in number and mild in character. Of this New Holland, which enjoys a very uniform temperature, furnishes an apt illustration. Vegetables and shrubs are here evergreen, and the groves and forests are clad

in a perpetual verdure. There is no shedding of leaves in winter, and Nature presents the whole year round all the luxuriance of summer. Similarly in the faces of some men of equable temperament she, under all circumstances, presents evermore the same placid smile. s.

**Temperament, The Restless.**—There are individuals and plants which are in a state of unceasing restlessness. The individual is best known by the name of fidget. He or she (for a woman is quite as often a fidget as a man is) exists in a perpetual fuss, and the work of life is a meaningless series of uninterrupted movements, whose end and object no human being can see. The activity is not strong and progressive, but consists in nervous fuss for the sake of fuss. The fidget never accomplishes anything as the result of all this restless motion. Yet this does not deter the creature from working out its fussy destiny. Alteration of the habit is utterly impossible. The fidget is a fidget by nature; as the *Desmodium gyrans* is a jerker by nature. Those who are acquainted with this very remarkable Bengal plant will have noticed that the lateral or very small folioles are almost always in motion, executing little jerks somewhat analogous to the movements of the seconds of a watch. One of the folioles rises and the other descends at the same time, and with a corresponding pace. When the first begins to descend the other begins to rise. The large or terminal folioles move also, inclining now to the right, now to the left, but by a continuous and very slow movement as compared with that of the lateral folioles. This singular mechanism endures throughout the life of the plant. It jerks itself day and night, through drought and humidity. The warmer and more humid the day, the more lively are its movements, as are also those of the dyspeptic fidget. The movements of both occur spontaneously and without any apparent cause. In India the plant has been known to make sixty jerks in the minute. The number of worries the human fidget can perform in a given time has never yet been accurately computed, the patience of man being quite unequal to the task of accurate computation. But gen-

eral experience puts the approximate number very high indeed ; particularly in the case of the female fidget, who, when settled even in the most comfortable circumstances, has been known, in one single day, to display her peculiarities to such an extent that the beholder, in utter dizziness and bewilderment, has been compelled to leave the spot. Happy is the man who is able to do so without having any necessity ever to return to it! v.

**Temperament, The Variable.**—Physiologists classify temperaments in a way which does not perhaps fully recognize the variable temperament. But the fact is that there is such a temperament, and its peculiar characteristic is just this, that it has the power of changing from time to time into the moods of all the other temperaments, from the lethargic to the sanguine. That broad, oval-shaped beetle, the *Cassida orichalcea*, so named by Fabricius on account of the brilliant brassy or golden luster which, notwithstanding its black body, it assumes, is found during most of the summer months on the leaves of the bittersweet (*Solanum Dulcamara*), on various kinds of convolvulus, and the sweet-potato vine. It has the power of changing its hues, at one time appearing only of a dull yellow color, and at other times shining with the splendor of polished brass or gold, tinged sometimes, also, with the variable tints of pearl. And it seems not an inapt illustration of the moods of the variable temperament.

1N.

**Temptation, Inaccessibility to.**—When the lotus-leaf is placed under water, it reflects light like a mirror, so that the image of any object, if presented to it at a proper angle, is seen by the spectator as distinctly as if the surface were one of polished metal. When water is thrown on the surface of a floating leaf, it flows off like a pool of quicksilver, reflecting light from the whole of its lower surface. This holds good on all occasions. On examining carefully the cause of this natural phenomenon, it is found that the lotus-leaf is covered by short microscopic papillæ, which entangle the air, and establish a kind of air-plate over the entire surface of the leaf, with which in reality the water never comes in contact. ¶ This peculiarity is famil-

lar to the natives of Australia, who have founded on it a kind of proverb, which may be thus translated: "The good and virtuous man is not enslaved by passion nor polluted by vice; for though he may be immersed in the waters of temptation, yet, like the lotus-leaf, he will rise uninjured by them." He is surrounded by an atmosphere of purity which prevents temptation from affecting him, and he reflects light all around him. GA.

**Terrestrial Adaptations, The System of.**—That the sea has a system of circulation for its waters we are ready, with all the confidence of knowledge, to assert. We rest this assertion upon our faith in the physical adaptations with which the sea is invested. Take, for example, the coral islands, reefs, beds, and atolls with which the Pacific Ocean is studded and garnished. They were built up of materials which a certain kind of insect quarried from the sea-water. The currents of the sea ministered to this little insect—they were its *hod*-carriers; when fresh supplies of solid matter were wanted for the coral rock upon which the foundations of the Polynesian Islands were laid, they brought them; the obedient currents stood ready with fresh supplies in unfailing streams of sea-water, from which the solid ingredients had not been secreted. Now unless the currents of the sea had been employed to carry off from this insect the waters that had been emptied by it of their lime, and to bring it to others charged with more, it is evident the little creature would have perished for want of food long before its task was half completed. But for currents, it would have been impaled in a nook of the very drop of water in which it was spawned; for it would have soon secreted the lime contained in this drop of water, and then, without the ministering aid of currents to bring it more, it would have perished for the want of food for itself and materials for its edifice; and thus but for the benign currents which took this exhausted water away, there, we perceive, this emptied drop would have remained, not only as the grave of the little architect, but as a monument in attestation of the shocking monstrosity that there had been a failure in the sublime system of terrestrial adaptations—that the sea



had not been adapted by its Creator to the well-being of all its inhabitants. Now we do know that its adaptations are suited to all the wants of every one of its inhabitants—to the wants of the coral insect as well as to those of the whale. Hence we say we know that the sea has its system of circulation, for it transports materials for the coral rock from one part of the world to another; its currents receive them from the rivers and hand them over to the little mason for the structure of the most stupendous works of solid masonry that man has ever seen—the coral islands of the sea. T.

**Terror, The Fascination of.**—Over some natures terror exercises an inexplicable fascination. Under its influence they are betrayed into the very jaws of danger. They remind us of the tree-serpents and the birds. The boomslang (*Bucephalus capensis*), a species of tree-serpent, is generally found upon trees, to which it resorts for the purpose of catching birds, upon which it delights to feed. The presence of a specimen in a tree is generally soon discovered by the birds in the neighborhood, who collect around it, and fly to and fro, uttering the most piercing cries, until some one, more terror-stricken than the rest, actually scans its lips, and almost without resistance becomes a meal for its enemy. During such a proceeding the snake is generally observed with its head raised about ten or twelve inches above the branch round which its body and tail are entwined, with its mouth open, and its neck inflated, as if anxiously endeavoring to increase the terror which it would almost appear it was aware would sooner or later bring within its grasp some one of the feathered group. MU.

**Test, A Fallacious.**—Man frequently satisfies himself that he has come to an accurate conclusion merely because on the application of what he considers an infallible test he discovers a particular anticipated result. Often enough the test is utterly fallacious. Take an example. The tanghin, or tanguin, is the only plant of its genus, and is confined to Madagascar. Its poisonous seed is esteemed by the natives an infallible criterion of guilt or innocence. After being pounded, a small piece is

swallowed by the supposed criminal. If he be cursed with a strong stomach, which retains the poison, he speedily dies, and is held guilty; if his feeble digestion rejects it, he necessarily escapes, and his innocence is considered proven. Now it is obvious to any educated mind that innocence and guilt are in no way disclosed by this process. Yet inasmuch as it has been accepted as a test, its results are unquestioned. And there are numberless instances in which English society consents to be governed by the results of tests, simply because those tests are generally accepted. Again and again it becomes important to inquire whether, supposing your test does disclose a given result, that test is really as infallible as you deem it to be. Many will be found to be only "tanghin" tests, and as such utterly fallacious. D.

**Thieves, A Low Order of.**—In the time of Desfontaines, baboons were so common in the forests of the Atlas in Africa that in the environs of Stora the trees were frequently covered with them. They feed, says that author, on pineapples, sweet nuts, Indian figs, melons, watermelons, and the vegetables which they pilfer from the gardens of the Arabs, whatever care the latter may exercise to keep these ill-doing animals at a distance. While engaged in their thieving operations, two or three mount to the top of their tallest trees and loftiest rocks to keep watch, and when they perceive any person approaching, or hear any noise, they give a cry of alarm, whereupon the whole troop immediately take flight, carrying with them all they have been able to seize. D.

**Thieves Seldom Prosper Long.**—It has often been remarked that property acquired by fraud and cheating seldom permanently benefits the possessor. This seems to be the rule, also, among the feathered tribe. Occasionally the sparrows, which take advantage of every cavity about our houses for their own purposes, finding the nest of a martin ready for use, take possession of it without ceremony; in this case the rightful owners endeavor, generally with success, to oust the intruder from their domicile. Sometimes, however, the sparrow in pos-

session obstinately refuses to quit his usurped abode, and then the martins have been seen to adopt a very curious mode of revenging themselves. When the owners of the nest find that all their endeavors are insufficient to turn out the robber, they collect their friends and neighbors in great numbers, and watch the moment when the sparrow is engaged in the business of incubation; then the whole body, each bearing a mass of soft earth in its bill, rushes at once to the nest, and in a few moments the aperture at the top is closed by a solid mass of mud, which no efforts on the part of the unhappy prisoner can possibly break through. So determined are they, indeed, to effect their object thoroughly, that in a case recorded by the Vicomte de Tarragon, the mass of clay stuffed into the aperture was nearly of the form and size of a small hen's egg, the two ends projecting into and out of the nest. The sparrow was found dead upon her eggs. MU.

**Thoughts, The Vitality of.**—Many kinds of seeds are gifted with powers not merely of retaining life under the ordinary circumstances of Nature, but of resisting the most terrible attacks. When wine has been made from raisins, and the refuse has been scattered over the fields as manure, it has been observed that the grape-seeds have vegetated and produced young vines, and this notwithstanding the boiling and fermentation they have had to endure. The seeds of elderberries have been observed to grow after similar trials. Many experiments have been made to ascertain exactly what amount of unnatural heat seeds can bear without being destroyed. It considerably exceeds that which plants can bear; and the same is the case with extreme cold. Thoughts resemble seeds in many respects—in their unobtrusiveness, their modes of dissemination, their growth into vast things, and also, and very notably, in their vital power, whereby they withstand all the frosts of time and all the fires of persecution. LI.

**Thoughts Improve with the Thinker's Age.**—As the orange-tree increases in age, so the fruit improves in quality, the younger trees bearing fruit with a thicker rind and abundance of

seeds. As the tree becomes older the skin becomes thinner, the fruit much more juicy, and the seeds diminish in number. Some of the old neglected trees bear fruit of the thinnest skin and most luscious flavor. Some of the trees at the Azores bear at a very great age; some in one garden were one hundred years old, still bearing plentifully a highly prized, thin-skinned orange, full of juice and free from pips. The thinness of the rind of a St. Michael's orange and its freedom from pips depend upon the age of the tree. Here, then, we clearly see a genuine illustration of improvement with age. It typifies the mind of the thinker. In the early fruit of the thinker's mind we have many specimens of thoughts which, though of the right sort, are, perhaps, not perfectly mellow and refreshing. But as the years run on, a man's thoughts become more and more perfect, and compare most favorably with those which are produced by younger minds. Landor entitled one of his books "The Last Fruit of an Old Tree." It was the ripe production of a splendid mind at its best.

GA.

**Timidity the Concomitant of Weakness.**—The weakest and meanest persons are invariably the most timid. They have just sufficient wit to know that their wit is not to be relied on. And it is singular how much this timidity in men depends upon the mental and moral atmosphere in which they have been reared. Those whose natures have developed in the genial smile of warm friendship, and in frank and open associations, are usually stronger, and possessed of more self-reliance, than men who have been trained amid surroundings where those elements have been wanting. Their mental strength and courage, like the physical strength and courage of the true lizards (*Lacertidæ*), seems to depend a good deal on temperature. In the glowing regions of the tropics these lizards grow into large proportions, and are bold and brave, because they are conscious of their strength. But in more northern countries they are timid, because they are weak and of small size. Should a slight noise strike upon its ear, or an unaccustomed object suddenly come in view, the little lizard, previously, perhaps, lying

basking in the rays of the sun, may be seen to raise itself immediately upon its feet, to draw back its head, and in that attitude carefully watch everything around it. A leaf may have suddenly fallen to the ground; it starts, watches the object for a time to see whether it will move again, then carefully advancing nearer and nearer examines it well, and satisfying itself of its nature, returns to its position and lays itself down again to enjoy the warmth it loves so much. Should the danger be real, however, it flies like lightning. And because in all these movements it is so conscious of its feebleness, it is like the feeble-minded man, who is constantly suspicious of impending danger; and its timidity is its protection from the calamities it fears to face.

MU.

**Tolerance, An Incitement to.**—That birds do mischief among ripe corn there can be no doubt, but the harm they cause in autumn is amply compensated by the good they do in spring, from the havoc they make among the insect tribes. The quantity of grubs and caterpillars annually destroyed by rooks and various small birds must be immense. Some which feed on the wing, as swallows, etc., devour millions of mosquitoes and other winged insects. Even the titmouse and bullfinch have been proved to attack only those buds which contain a noxious insect. These facts should incite us to tolerance. Undoubtedly it is provoking to see a bird, or an evangelist, or a stump orator, doing mischief. The notion of some people is to exterminate them at once *in flagrante delicto*. But this is rash folly. A fair investigation of the entire proceedings of the offenders for a whole year will reveal that their good offices exceed their occasional mischievousness.

GA.

**Tolerated Offensiveness.**—The Bengal vultures (*Gyps Bengalensis*) feed upon carrion, and gorge themselves into a state of inactivity whenever an occasion presents itself. The recognition of the good services which they render to the public health in consuming putrid matter protects them from disturbance, so that, like licensed scavengers, they are allowed to go about their dirty business without molestation. Though

cowardly, they lose all shyness, because they know they will not be hurt by man. Offensive as their habits are, he tolerates them as he does other nuisances, because by doing so he escapes a worse penalty. A vulture is objectionable; carrion is more so. A despotism is bad; anarchy worse. There are plenty of other examples of tolerated offensiveness; but the reason for their existence is always the same, and is founded upon utility. MU.

**Tortuousness the Habit of the Weak.**—With its large and light wings, the butterfly can fly for a long time. But it never flies in a straight line. The line it takes is composed of an infinity of zigzags, going up and down, and from right to left. Thus it is saved from the bird which pursues it, whose flight is far more rapid; for the butterfly is always higher or lower than the place to which the bird flies, expecting to catch it. Its tortuousness is not only its defense, but its habit. So it usually is with weak natures. There are weak-minded people who never go straight. The butterfly goes zigzag even although no enemy is near; and these human flutterers persist in crooked paths even when there is nothing to fear from going straight. By the habit of their weak natures they habitually shuffle and equivocate. You may as reasonably expect a butterfly to fly in a line like a crow, as expect this sort of people to abandon their tortuous courses. I.

**Tranquillity, A Deceptive.**—We love tranquillity; but there are forms of it which are most deceptive. There are men and women whose appearance of calm is as illusive as is that of the viperine serpents. These latter reptiles have a dull, heavy disposition, and a slow mode of progression, which suggests a nature too sluggish to do any harm to any one. But like some human beings, though they are too tranquil to search for prey, they know well enough where to lie in wait for it. Placing themselves in the situations where their victims are sure to pass, they enjoy their laziness until there is a reason for discarding their appearance of tranquillity and using for their own benefit the extraordinary activity which they can command. Then,

when the unsuspecting prey approaches, they raise erect their head, which was negligently, as it were, elevated while in a state of repose; they open their mouth so wide that the two jaws form an obtuse angle; they erect their fangs, the body uncoils like a loosened spring; and the serpent, aiding the sudden assault by resting upon its tail, darts at a single bound upon its victim, to inflict the fatal wound. The act is the work of an instant; the head, by the sudden and violent contraction of its flexor muscles, executes with the rapidity of lightning a movement by which it plunges its fangs deep into the flesh of its prey. Such are movements which resemble those of "that old serpent the devil."

MU.

**Transformation, A Moral.**—There are marvelous transformations in the material as also in the moral world. Look in the material world. The full-fed maggot, that has rioted in filth till its tender skin seems ready to burst with repletion, when the appointed time arrives leaves the offensive matters it was ordained to assist in removing, and gets into some convenient hole or crevice; then its body contracts or shortens, and becomes egg-shaped, while the skin hardens and turns brown and dry, so that, under this form, the creature appears more like a seed than a living animal; after some time passed in this inactive and equivocal form, during which wonderful changes have taken place within the seedlike shell, one end of the shell is burst off, and from the inside comes forth a buzzing fly, that drops its former filthy habits with its cast-off dress, and now, with a more refined taste, seeks only to lap the solid viands of our tables, or sip the liquid contents of our cups. Look again into the moral world. There you see a transformation as wonderful. The selfish debauchee, whose horrid taste has grubbed in every sort of immoral filth, and become habituated to the harsh, the cruel, and the dishonorable, has been brought into contact with the necessary spiritual conditions for a change, and, behold, from one stage to another he passes until at last his tastes are entirely altered, his existence is changed, and even he is able to soar in the light and purity of the world. Else-

where, behold, the miser is transformed to the philanthropist, the coward into a hero. We watch the fly's aerial circlings in the sunbeam, and remember with wonder its degraded origin. The preacher looks over his congregation, and as he sees those who have become noble and virtuous, he is able to take heart for new work; for as he remembers in their presence the debased and wicked who are yet to be transformed, he says: "And such were some of you; but you are regenerated by the higher Power," and those others may be changed likewise.

IN.

**Transformations, A Series of Marvelous.**—The genus *Æstrus*, the gadflies, are formidable insects which attack the horse, the sheep, and the ox. The *Æstrus equi* is found in France, in Italy, and also in the East, especially in Persia. During the months of July and August it frequents pastures and deposits its eggs chiefly on the shoulders and knees of horses. In order to do this, the female suspends herself in the air for some seconds over the place she has chosen, falls upon it, and sticks her eggs to the horse's hair by means of a glutinous liquid with which they are provided, and which soon dries. This is repeated at very short intervals. It often happens that from four to five hundred eggs are thus deposited upon the same horse. Guided by a marvelous instinct the female *æstrus* generally places her eggs on those parts of the horse's body which can be most easily touched with the tongue, that is, at the inner part of the knees, on the shoulders, and rarely on the outer part of the mane. When licking itself, the horse carries them, and the larvæ which soon emerge from the eggs, into his stomach with his food. It passes through various stages in the horse, and on leaving the body of the horse in its last stage, falls to the ground, after which, in due time, it takes wing and flies off.

I.

**Transformative Forces.**—Every butterfly begins life as a grub developed from an egg; then it becomes a "chrysalis"; only in its third and last stage is it a winged creature. Not that the grub is metamorphosed; it contains within its soft little



body the whole of the future butterfly, and when the chrysalid condition is assumed, the butterfly often shows as plainly in it as a flower while wrapped in its calyx. In other words, the transition from the grub to the butterfly is not a "transmogrification," but a simple casting away of outer vestments, and a growth of the immature creature within to full and royal ripeness. What a marvelous thing it is that an insignificant dot of an egg should contain wrapped up within itself all this transformative force! Does man possess such a power? A possible "yes" suggests an explanation of many grand problems affecting futurity.

LI.

**Transient, The.**—What an emblem of all transient things is the beautiful ephemera! To acquire its elegant form that lovely winged insect has been obliged to undergo several wonderful transmutations; but its glory, like man's pomp, is very short-lived, for the very hour of its perfection is the hour of its death, and it seems scarcely introduced to pleasure when it is obliged to part with life.

A.

**Transmutation, The Law of.**—Nothing remains fixed. Throughout Nature all substances are perpetually changing their forms, and passing into each other. It is so with even the hardest substances. We find that even anchors, cannons, and other cast-iron implements, which have been buried for a few hundred years off our coast, have decomposed in part or entirely, turning the sand or gravel which inclosed them into a conglomerate, cemented together by oxide of iron. We know not what possibilities of transmutation are included in the nature of a human being; but we have ascertained with certainty that there is inherent in even some of the lower creatures a transformative principle, the operation of which is perfectly extraordinary and fraught with suggestiveness. Take the following example: On a hot July day a lover of Nature discovered numbers of animalculæ in a vessel of rain-water which was exposed to the action of the air. In order to learn more of their habits, one of them, which scarcely measured an eighth of an inch in length, was captured, and placed in a hyacinth

glass, wherein a seedling oak was growing. Upon regaining its liberty the little thing immediately swam to the bottom of the glass and hid itself in the filmy sediment which had settled there. After a moment or two it was quite at home, darting hither and thither in search of food too microscopic for human eye to discover. It needed no tending. It fed, gambled, and rested in safety. In a few days it had grown to twice its length. There was also a strange enlargement toward the upper part of its threadlike form. Its tail was furnished with a fan-shaped fin, while two other fins, more delicate than gossamer, developed themselves upon its head. Its motions became more and more rapid, and, surprising to relate, its gravity lessened as its dimensions increased. When an almost invisible thread it had to swim to reach the surface of the water; but now that it measured a quarter of an inch in length, and had grown strangely large about its upper parts, it rose involuntarily to the surface. The old predilection, however, for the darker regions in the sediment at the bottom of the glass was still a ruling principle, and its continual struggle was to dive down to those filmy haunts. As long as it moved its little fins it succeeded, but the moment it rested it began to rise toward the surface. Each hour strengthened this new principle, and often would it lodge beneath some fiber of the oak's threadlike root in order to stay its upward course, until at last all power of resistance was overcome, and it floated motionless upon the surface of the water. A card cut to fit the glass served at once as a protection to the seedling oak and as a cover to its companion. Upon the next investigation the empty skin of the animalcule was seen floating on the water. Where was its inmate? Nothing could have destroyed it, and no exit from the glass was possible. A further search was made, when lo! upon the side of the glass, as high above its former element as it could go, was seen a beautiful and full-sized insect, perfectly developed in all parts, and ready, upon the opening of its prison-door, to fly away on its wings of gossamer and dance in the glorious sunbeam. It did appear wonderful that this exquisite

form, so foreign to the inhabitants of the water, should have emerged from the animalcule; but though so transfigured, and so dissimilar in all its modes of life, it was the same creature that once had shunned the light, and had fondly clung to the fibers of the little oak amid the darkness of its narrow prison.

G. N.

**Treatment and its Effects, Bad.**—We often remark that such and such bad effects are the results of bad treatment. If we want a striking illustration of what bad treatment can do, let us notice the natural history of the ass. The ass is far from being by nature so stupid as is generally supposed. Most of the donkeys that we see in America are no fair specimen of the animal. Many of them, from bad feeding and treatment, are not well grown; ill usage has rendered them obstinate and reckless; and when once the temper of an ass is spoiled, there is no possibility of making the creature tractable. It will bear numberless blows without mending its pace or exerting itself at all the more. But in its best condition, when well fed and well managed, it is capable of being trained and being attached to man with as much facility as the horse. Buffon even says that the ass is more susceptible of strong attachment than the horse, and under a good and kind master may be made to exhibit very great sagacity. In Arabia and Persia the ass is of a very different character from that in which he appears among us; and in Spain he is so highly bred, and brought up to such a degree of beauty and vigor, as to be for many purposes equal to the horse. In these countries asses are smooth and sleek; they carry their heads erect, and have finely formed legs, and walk or gallop with extreme grace and agility.

R.

**Tribunal, The.**—When in the height of summer the meadows are parched, and ponds and morasses are dried up, the stork resorts to the interior of the woods, with their glades, brooks, and marshes; and when also here, in the beginning of autumn, the inferior animals retire into their holes and winter abodes, he prepares for his migration to the south, and vast numbers collect together and cruise about in the air. At such times it

happens that the storks hold a tribunal. It is a "right with might," like old military German custom, if not even according to the Lycurgus code. On a retired mead the long-shanked personages come together from all quarters; they fly round and round in large circles, making a loud clapping, for the matter in hand is a grave one. There are fifty or a hundred. At first they move hither and thither, groups are formed, much passionate clapping is going on, and all betokens the approach of a stormy debate. At length the parties close up and form a large imposing ring, in the center of which, resigned to his fate, stands the victim. Single voices, shrill and loud, make themselves heard; it is the advocate for the prosecution, who brings forward the impeachment, and those charged with the defense, who fight the battle of the accused, whose sole crime consists in his weakness, and who, unable to bear the fatigues of the journey, it is now proposed to kill for his own and the people's good. The assembly frequently interrupts by its impetuosity the pathos of the speakers. At this moment another rises; he seems to make a declaration, and then the unfortunate wretch, pierced by the weapons of the assembly, succumbs to an early death. The rights of supremacy have been maintained, the multitude disperses, and there is nothing more to prevent the departure of the caravan. For ancient attestations of this fact see Pliny, Ælian, Melanchthon, Aldrovandi, Gesner, and others. In the northern part of Scotland, says Dr. Edmonson, and in 7 the Faroe Islands, extraordinary meetings of crows are occasionally known to occur. They collect in great numbers, as if they had all been summoned for the occasion; a few of the flock sit with drooping heads, and others seem as grave as judges, while others, again, are exceedingly active and noisy. In the course of about one hour they disperse, and it is not uncommon, after they have flown away, to find one or two left dead upon the spot. These meetings will sometimes continue for a day or two before the object, whatever it may be, is completed. Crows continue to arrive from all quarters during the session. As soon as they have all arrived, a very general noise ensues;

and shortly after the whole fall upon one or two individuals and put them to death. When the execution has been performed they quietly disperse. # R.

**Triumphs, Profitless.**—Men frequently purchase their triumphs at the cost of health or life. History is replete with instances of men who died in the hour of victory. The insect world also affords illustrations of profitless triumphs. Sometimes there are regular duels between bees. They descend to the ground to fight, for in the air they would not be able to get purchase enough to be sure of striking each other. They then engage in a hand-to-hand fight, as the gladiators used formerly to do in the circus. They are continually making stabs with their stings, but almost always the point slips over the scales with which they are covered. The combat is sometimes prolonged during an hour before one of them has found the weak point in the other's natural cuirass, and has buried its terrible weapon in the flesh. The victor often leaves his sting in the wound which it has made, and then dies, in its moment of triumph, through the loss of this organ. # 1.

**Troubles made Beautiful.**—Most of the shells of the oyster are pearly in the interior; and as the true pearls are merely morbid growths, they may all produce pearls of various qualities. The formation of pearls is caused by the introduction of irritating substances such as grains of sand between the mantle and the shell. The irritation causes the animal to cover the obnoxious object with layers of pearl, which generally attach the foreign body to the interior of the shell. The Chinese produce pearls artificially by placing substances in the position just described; and we have seen some shells to the interior of which small metal images were attached in this manner by the pearly secretion. When we look at a pearl we look at an annoyance which has been ennobled. The oyster by itself is of merely nominal value. But the result of the oyster's own treatment of its irritations in this world—the pearl—is something "of great price." # Apart from its pecuniary worth this gem has a moral significance. It suggests that troubles may be made

beautiful, and reminds us that among mankind some martyrs are more remembered by the glory with which they invested their sorrows than by any other portion of their lives. Biography has its moral pearls, which are treasured long after the creators of them have perished, just as material pearls are valued long years after the oysters have been discarded. N. D.

→ **True Tests are Unfailing Discoverers.**—Every substance is discoverable by some "test," which usually neutralizes it, or rather, by uniting with it, forms a new compound. The whole fabric of chemistry rests upon this wonderful principle as one of its corner-stones. Thus if the least fragment of copper be dissolved in acid, and the fluid be then diluted with water until no trace of color remains, so potent, nevertheless, is the affinity of the well-known fluid called "ammonia" for the copper, that a single drop of the latter fluid will immediately reveal the presence of the metal by uniting with it, and forming a new substance of the loveliest violet color. # Similarly, if a morsel of  
 7 lead be dissolved in acid, and the acid be then diluted with water, a single drop of a solution of iodide of potassium will turn the whole to a brilliant crocus-yellow. The presence of iron, after the same manner, is discovered by the least drop of tincture of galls, which blackens it upon contact; that of silver by a little solution of common salt, which causes flakes of imitative snow to make their appearance; that of mercury, again, with iodide of potassium, which turns the fluid containing it to a beautiful red. 1/

L1.

1/ **Trustfulness Employed as a Means of Ensnaring.**—Few of the attempts to catch men in traps, and subordinate them to other persons' uses, would be successful, were it not that, as a preliminary, there is awakened a confidence and trustfulness which disarms suspicion. This is, in most cases, an absolute necessity as a first step. Make a man believe that you intend him no harm, and then when you—joint-stock-company promoter, attorney, stock-broker, or whoever you may be—have, by virtue of that belief, got him well in your power, you can handle him with every advantage, and he is an easy prey. Ob-

serve how mullets are caught in the Mediterranean, and you will see this principle working most beautifully. The fisherman feeds them with pounded macaroni or other farinaceous pastes; and when they have been attracted to a convenient locality, and acquired confidence by several days' undisturbed feeding, a very small hook, enveloped with paste and attached to an exceedingly fine line, is dropped noiselessly. When the bait is swallowed dexterity is required to withdraw the hooked fish without disturbing the others. Their confidence having been obtained, they will not easily suspect unless some great blunder is made. Like shareholders in a fraudulent company managed by clever knaves, they will only remember what they have had, and, in their trustfulness, imagine no evil of those who are looking on, and who have given only that they may get. MU.

**Truth, Moral.**—Moral truth is, in its universality, like the pine-tree. Societies have claimed it as being especially their own, as some naturalists have claimed the pine-tree as a feature of northern climes. But both are wrong. As to the pine, it is represented in all zones, from the cedars of Lebanon to the juniper-tree and fir-bushes of the Scandinavian mountain-tops. To use Oken's significant expression, they form "the mountains' roof." They stretch upward from the wide plains and steppes of sand, leaving the foliage-covered trees below them. Where, says Dr. Masius, the granite builds its towers to the clouds, and the waters leap thundering from the rocky hollows, there this array of lances is planted, and the black banners wave. They climb to the highest summits, and when all other vegetation is extinct, the dwarf pine (*Pinus pumilio*), laid level with the ground, still creeps on. The blast rages amid its hair and shaggy beard of moss, and makes rough work with its grotesquely outward-stretched arms, close pressed to the earth; but the gnome does but twine its branches in a yet closer embrace, and fasten with iron strength on the stones of the moor, in which it has planted deep a hundred roots which nothing can tear out. Thus it is with moral truth. It is not merely indigenous. It is universal. There are particular trees,

as there are certain forms of speculative and political truth, which can survive only in a limited region; the one being fitted only for a peculiar atmosphere as the other is adapted only to circumscribed types of mind. But moral truth flourishes among all the mental productions of man, as the pine among the vegetation of the world. You see it in every zone. It must thrive, because it is suited and intended for the world. ST.

**Truth, The Extension of.**—We are not instructed all simultaneously by Nature, or by any direct manifestation from on high. Each one of us has to receive for himself from some one else what that other knows, and then has to transmit that knowledge to some other again. We have no direct communication with absolute truth. It is transmitted to us through innumerable media. So with sound. Sound is not propagated *in vacuo*. The vibrations of elastic bodies can only produce the sensation of sound in us by the intervention of a medium interposed between the ear and the sonorous body, and vibrating with it. This medium is usually the air, but all gases, vapors, liquids, and solids also transmit sound; just as everything—objective and subjective—may convey truth. EL.

**Truth, Dissemination of.**—Truth is like seed in its inherent vitality, and in the many methods by which it is disseminated. How are seeds diffused? Wind, running water, blocks of ice drifting in the Polar seas, the action of animals and men—that is, by cultivation—ships, merchandise, and voyages; such, says Figuiér, are the causes, more or less powerful, which affect the conveyance of seeds from one place to another. If we consider how many seeds are light, hairy, and provided with a sort of wings in their downy tufts, we can understand that the wind may be the most general and ordinary means for disseminating vegetable germs over a country. Rivers also carry away the seeds of plants to great distances. If their course runs from east to west, or west to east, the seeds thus transported would much extend the limits of the species. And navigators of the Polar seas often meet with icebergs loaded with an enormous mass of *débris* mixed with earth and seeds.



Seeds vegetate on this *débris*, and if the iceberg runs aground on some distant coast, where it melts, the seeds are deposited; they soon produce plants, which are then spread over the country by various other influences. But marvelous as are the ways by which seeds get dispersed and preserved, surely the varied methods by which truth is disseminated from zone to zone, and tribe to tribe, are still more wondrous. They baffle all description. The germs never die under any hostile influence; nor does age impair their vitality. No sect or organization is specially employed as the vehicle for their dissemination. The song, the book, the life of the noble, the death of the tyrant, the kind word, the heroic struggle—these, and a thousand other noble agencies, seen and unseen, are among the mystic forces by which the truth is scattered all the wide world over, taking root wherever it touches. v.

**Truth Bewildering to Some, New.**—Men who have lived in traditional knowledge do not thank you for a new truth. It dazes and confounds their dim vision, which is unsuited to its reception. Their bewilderment at the light is similar to that of the cricket. As the cricket lives chiefly in the dark, so its eyes seem formed for the gloominess of its abode; and you have only to light a candle unexpectedly, and it becomes so dazzled that it cannot find its way back to its retreat. A.

**Tumultuous may Occasion the Sublime, The.**—Not only in individual experience and in national history is it true that tumultuous events may give rise to a sublime sequel, but in the material world the same sort of result may be seen. Most of the sublime and the beautiful in the scenery of a country depends upon some powerful disturbing agency, by which the earth's crust has been disturbed, broken, and overturned. Mountainous countries exhibit this action most strikingly. Beautiful as vegetable Nature is, how tame is a landscape where only a dead level is covered with it, and no swelling hills, or jutting rocks, or murmuring waters relieve the monotonous scene! And how does the interest increase with the wildness and ruggedness of the surface, and reach its maximum

only where the disturbance and dislocation have been most violent!

R. G.

**Unaccountable Blundering.**—The jackdaw in many things is a wonderfully clever bird, displaying such an amount of ingenuity in its actions that its rational capacities are evidently very great. But like most birds, however clever it may be, and however admirably it may adapt itself to circumstances, it is sure to break down suddenly in an unexpected manner, and to fail in the easiest part of its task. A jackdaw goes afield in search of sticks, and will spend some time in selecting a branch that will serve its purpose. When it has found a suitable one it flies away to the spot it has chosen for its nest. When taking up the branch the jackdaw mostly carries it by the middle, because it can easily be balanced when so held, forgetting that a branch held crosswise will not enter a small aperture, and accordingly finding itself checked when endeavoring to gain admission to its domicile. It flutters about in great dismay, trying with all its powers to force the branch into the hole, but it never thinks of the simple expedient of taking the branch by the end and pushing it lengthwise through the entrance, and after wearying itself out in vain attempts, drops the branch and goes off for another. #Considering the cleverness of the bird, this is a piece of unaccountable blundering. Yet, strange to say, it is just that sort of blundering which, even in the human family, one so often finds in association with cleverness. Who has not known a really able university man, skilled in every department of learning, break down in an important affair in consequence of the commission of a trivial blunder which it would have seemed impossible for him to commit. Biography is strewn with the troubles which clever men in all departments have had to endure as the penalty of their being fated to commit some one queer blunder which every one would have supposed them too sensible to even imagine. In every direction one may see a human jackdaw quite baffled by a trifle. H.

**Undeserved Credit.**—Much stress has been laid on the self-sacrifice exhibited by the rabbit when she prepares her cradle

for her young with fur taken from her own breast ; but it is believed that there is no self-sacrifice in the matter. If handfuls of hair were pulled out from the human head, exceeding pain would be suffered. But the case of the rabbit has no real analogy with such a proceeding, for the fur of the animal is at that time so loosely attached to the skin that it falls off as easily as the hairs of a cat in summer, and its evulsion produces no such disastrous effects as would follow the forcible plucking out of the human hair. ~~#~~ The eider-duck presents similar features, the parent birds stripping themselves of their down in order to form a warm bed for their young. The act is purely an instinctive one, involving no more self-sacrifice than is occasioned by any other instinctive act, and does not at all entitle the creature to credit for self-denying conduct. ~~#~~ But it is not only among rabbits and ducks that we are likely to make mistakes of this sort. We frequently ascribe acts of self-sacrifice to subscription-list members of the human family, who are in no way entitled to the credit we give them. A vulgar, vain, rich man, who desires reputation as a patriot and philanthropist, finds it as natural and easy to give away wealth as it is to a rabbit to give away fur, or a duck feathers. He does not miss what he gives even so much as they do ; and if he wants successfully to " nurse " a constituency, it is quite as necessary for him to line the cradle of his political organization with gold as it is for a rabbit or a duck to prepare the place where their future hopes lie with fur or feathers. H.

**Undeserved Stigma, An.**—Sometimes politicians, communities, or families acquire a reputation which clings to them from year to year without the slightest justification. An opinion once fairly started often runs unquestioned through the world, and often an undeserved stigma enjoys a long life. We may illustrate this by the case of the wasps. Everybody praises the bees ; nobody has a good word for the wasps. Yet the wasps at home are an excellent body. In spite of their warlike instincts you generally find, in the interior of the nests, the most perfectly good understanding existing. It is only on rare occa-

sions that this domestic peace is disturbed by the quarrels of male with male or worker with worker; but these combats are not deadly. Never, moreover, has one nest of wasps been known to declare war against another for the purpose of robbing it. The government of wasps, says M. Victor Rendu, explains very well the gentleness of their public conduct. Among them there are no despots; no one either reigns or governs, each one lives at liberty in a free city, on the sole condition of never being a burden to the state. They all act in concert, without privileges or monopolies, under the influence of a common law—the great law of the public good, from which no one is exempted. Why should these creatures have a bad name? 1.

**Undesigned Services.**—In performing properly our duties in the world, we may often be the means of effecting good of a character and to an extent altogether beyond either our calculation or design. Like the humblebees, we may accomplish unpremeditated service, and be, like them, quite ignorant of the fact. Mr. Darwin believes, from observations made over a series of years, that humblebees are indispensable to the fertilization of the heart's-ease (*Viola tricolor*), as they are the only set of bees which visit that flower. He has tried experiments which convince him that the visits of bees are almost indispensable to the fertilization of our clovers. He has observed that humblebees *alone* visit the common red clover, as other bees cannot reach the nectar. And he has very little doubt that, if the whole genus of humblebees became extinct or very rare in America, the heart's-ease and red clover would become very rare, or wholly disappear. So that these bees, in going about their own business, perform unintentionally a most useful service to mankind. It is impossible to assess the limits of the influence of any act, even the act of a bee. The creature which is true to its instincts may render to creation marvelous services unawares. MU.

**Undesirable Protectors.**—When the policeman whom we have called interferes with civil liberty which has not been for-

feited, or the lawyer, in conducting our defense in an action of debt, runs up a bill vastly in excess of the claim, it is obvious we have placed ourselves in the hands of very undesirable protectors. We are more injured than protected. Yet as a fact we are constantly setting a thief to catch a thief, and being ruined by our excessive shrewdness. So the inhabitants of St. Thomas in the East, in Jamaica, finding themselves greatly inconvenienced by the number of ants in the district, determined to bring to the rescue one kind of ant which they discovered could exterminate them. They accordingly introduced the "rifle-ants." They did their work well: ate up all the other ants; but then they commenced to eat up everything else which came in their way; and as there was no way by which they themselves could be exterminated, they continued the practice. And in their practice they teach us this lesson—that we cannot be too cautious as to what persons we summon to our aid. For though there are many who may do their work well, they may also be too much for us afterward. # jo.

**Undeveloped Capacities.**—Have you not sometimes come into contact with a strong mind, and felt regret that beauty and grace of disposition were not added to that mental strength? You have felt that they were by nature intended to be found in association, and though charmed with what there was, you sighed for what ought to have been. (There are many men whose natures ripen into perfect strength, but without ever developing the charms and graces which you know must be indigenous. They are like those plants which Humboldt tells us grow with the greatest vigor in certain localities without ever flowering, though of the flowering kind. And the accidents of circumstance and place account for these facts in the man and plant alike. #

VI.

**Undividable Blessing, An.**—It is scarcely a metaphor to speak of the *living ocean*; life is so intimately blended with its substance, is so inherent in its chemical composition. The analyses recorded in books do not furnish a very exact idea of this composition; they represent the sea-water as a mineral

water, containing chloride of sodium (sea-salt), sulphate of magnesia, chloride of magnesium, carbonic acid, carbonate of lime and of magnesia, sulphate of lime, besides some traces of potassa, iodine, bromine, and oxide of iron. These analyses take no account of the mucus, the gelatinous matter belonging or having belonged to the innumerable beings which the sea-water nourishes, and which, in effect, convert the water into an *organic* medium. Take some river-water at its well-head, filter it, and pour it into a vessel; you can preserve it for a long time wholesome and drinkable, and only after a considerable interval does it stagnate. But sea-water, as soon as it is separated from the great body of the ocean, and inclosed in a bottle or a cask, dies—grows corrupt and noisome. It can neither be transported to any place nor preserved. And yet it is not its salts, assuredly, which corrupt it; no, it is the mucus; it is the myriads of invisible animalcules which immediately perish and putrefy. Thus the sea is a strengthening tonic and salutary only for the bathers who plunge into its waves. MY.

**Unexpected Utility.**—We may find useful qualities where we could hardly have expected their existence. Few persons would consider mud to be a cleansing agent. Yet in spite of its adhesiveness, its color, and its odor, it has the advantage of being so. It acts as a kind of marine soap, and does really cleanse the hands thoroughly, a property which is very useful when one is out for a cruise and the supply of fresh water on board runs short. No doubt there are hundreds of other substances as unpromising in appearance as mud, which have unexpected uses to which they could be put if we could only find them out. C. S.

**Unimportant Acts may Acquire Illimitable Significance.**—In the new red sandstone of the valley of the Connecticut River, the red flags of thin-bedded sandstone are often ripple-marked, and exhibit on their under-sides casts of cracks formed in the underlying red and green shales. These last must have shrunk by drying before the sand was spread over them. On some shales of the finest texture impressions of rain-

drops may be seen, and casts of them in the incumbent argillaceous sandstones. Having observed similar markings produced by showers, of which the precise date was known, on the recent red mud of the Bay of Fundy, and casts in relief of the same on layers of dried mud thrown down by subsequent tides, Sir Charles Lyell has no doubt in regard to the origin of some of the ancient Connecticut impressions. He has also seen on the mud-flats of the Bay of Fundy the footmarks of birds (*Tringa minuta*) which daily run along the borders of that estuary at low water. Similar layers of red mud, now hardened and compressed into shale, are laid open on the banks of the Connecticut, and retain faithfully the impressions and casts of the feet of numerous birds and reptiles which walked over them at the time when they were deposited, probably in the triassic period. According to Professor Hitchcock, the footprints of no less than thirty-two species of bipeds, and twelve of quadrupeds, have been already detected in these rocks. Thirty of these are believed to be those of birds, four of lizards, two of chelonians, and six of batrachians. The tracks have been found in more than twenty places, scattered throughout an extent of nearly eighty miles from north to south, and they are repeated through a succession of beds attaining at some points a thickness of more than a thousand feet, which may have been thousands of years in forming. If we were to-day to observe one shower of raindrops, or the footstep of an ordinary bird or reptile, we should no doubt consider the matter as very unimportant. Yet what significance may attach to these trifles! The mark of a bird's claw may interpret a page in the grand theological history of the world to some future explorer. These marks look transient. They may be indelibly imprinted in the stony records of the earth. In the moral universe, too, it is also certain that many things are registered in permanent characters which superficial observers may now consider to be trivial. History perpetuates many acts which were supposed to be transient and unimportant, and in later ages the philosopher explains them. Who can place a bound to the influence of any

act, even the movement of a bird's claw in the mud? The voices which speak to us in the universe are many, and they address us through many symbols. A reptile's accidental footprint, made many thousands of years ago, becomes to-day a sort of telephone whereby a remote age tells us part of its strange story.

E.

**Union, Similarity is no Guarantee of.**—Why is it that the polar and equatorial waters should appear now to divide and now to be divided? The Gulf Stream has revealed to us a fact in which the answer is involved. We learn from that stream that cold and warm sea-waters are in a measure like oil and vinegar; that is, there is among the particles of sea-water at a high temperature, and among the particles of sea-water at a low temperature, a peculiar molecular arrangement that is antagonistic to the free mixing up of cold and hot together. At any rate, that salt waters of different temperatures do not readily intermingle at sea is obvious. In fact, it often happens throughout this world that similarity is no guarantee of union. In matters of human opinion the currents often run side by side, and seem in all respects similar to each other; yet they will not unite. This is very noticeable in the various Christian denominations, whose professions are often so similar as to make the difference between them difficult of detection; yet they will not unite. There is a religious gulf stream, and hence similarity without union.

\* T.

**Unity of Essence in Variety of Form.**—Literally, allotropism or allotropicity, when translated into plain English, is a very startling thing indeed, meaning, says Dr. Scroffern, little else than expression of the fact, or rather belief, that some one thing may be some other thing, and yet remain the same thing. Here is an illustration: everybody knows that the diamond to look at is very different from a lump of charcoal to look at, and both different from a piece of black-lead. This is physically evident; yet chemistry, apply it as we may, only proves that the diamond, charcoal, and black-lead are one and all carbon. If a diamond be actually burned in oxygen gas, carbonic acid re-



sults; the very same gas we obtain by the combustion of charcoal in a stove. More evidence. By exposing diamonds to heat in a certain way they can be changed to coke. Here, then, we have an agent, an element, that element carbon, assuming *three* forms. Chemically the element carbon *is* the same; physically it is *not* the same. We see the same truth exemplified in every-day life. The same moral principle may assume a variety of forms. Self-sacrifice, for example, may take the form of a humble act done by one obscure peasant for a neighbor, or may shine in a king's deed of chivalry which is the admiration of the world. In the former shape the principle is not recognized as being so valuable; as also the coke is not so precious as the kohinoor. But in coke and kohinoor, as we have seen, the essence is the same; so in both the act and deed just referred to, the principle of self-sacrifice would be the same, and the difference in the form only.

S. N.

**Universal Brotherhood, A Hint of.**—It is the fact that “languages are many, when people are savage and rude, or semi-barbarous.” In proportion as men become civilized and communities more extensive, they become few in number, the smaller and ruder dialects being gradually absorbed or violently exterminated by the prevalence of the more polite, improved, and consequently the most useful forms. May it not be inferred that there will ultimately reign among all people one common language? In that event, the possibilities of misunderstandings between men would be immensely reduced, and a universal brotherhood would be a realized dream.

S.

**Universe a Progressive System, The.**—It is now generally admitted by all the greatest philosophers of modern times, that this earth at its origin was an immense mass of vapors and incandescent gases, forming what astronomers call a “nebula,” or “nebulous matter.” And its history to the present day is a history of constant progress from a lower to a higher state. Illustrations of some of the marvelous methods by which Nature evolves improvements out of apparently chaotic conditions are within our knowledge, and afford some clue to the kind of

upward and onward movement which has been going on throughout the world ever since the dawn of time. Let us take as an instructive example the present position of the reptile race, and its apparent use in the plan of Nature. The chief residence of the reptile race is to be found in hot climates, and in low, swampy ground, where the morasses are ever filling with decaying vegetable matter, and exhale a soft, thick miasma, as deadly to the white man as the fumes of arsenic, and injurious even to the dark-skinned native, who can breathe unharmed a fetid atmosphere that would smite down his white master as quickly and surely as if he were struck with a bullet, and who only attains his fullest development under these conditions. In these dread regions, their seething putridity, concealed by all the luxuriant vegetation of tropical climes, like a royal mantle flung over a festering corpse, the reptile race abound, the poisoned air being to these creatures the very breath of life, and the surrounding decay the sustaining power of their existence. Indeed, the object of their lives seems to be, by individual transmutations of poisons into living flesh, to destroy by slow but certain degrees the mass of decaying vegetation, and so to prepare an abiding-place for beings of a higher order than themselves. On placing ourselves even in imagination amid such scenes, we seem to be transported back into the former ages of our earth, when man could find no resting-place for his foot, and no atmosphere which he could breathe and live; when the greater part of the soil was little more than soft mud, the air thick, dank, heavy, and overcharged with decomposition, and the multitude of strange reptiles that bored their slimy way through the deep ooze, crawled lazily upon the slowly hardening banks, or urged their devious course through the turbid waters, were the physically ruling though morally subservient powers of the world. Little is wanting to complete the illusion, except to give to every object an increase of dimensions, for the vegetation of those days was rank and luxuriant to a degree that is now well indicated, though on a smaller scale, by the foliage of the tropics, and the huge forms of the ancient and now extinct

reptile race are closely reproduced by the more familiar inhabitants of the swamp before us. As the expanse of putrefaction was greater in those epochs, so the miasma destroyers were larger. Frogs and toads as big as calves, reptilian quadrupeds as large as elephants, and reptilian bats expanding leathery wings as wide as those of the pelican, were fit inhabitants of the atmosphere which they breathed, and in which their mission was consummated. Now that the marshy districts are smaller and less poisonous, the reptile race that inhabits them is of smaller dimensions. The earth has now been so far purified by successive generations and regenerations of life and death, added to human ingenuity and industry, that its harmful districts occupy but a comparatively small portion of its surface, the greater part of the world being suitable for human habitations, the black man settling as a pioneer, a hewer of wood, and drawer of water where the white man cannot yet abide. If we turn our attention from the physical structure of the universe and its changes, and consider the history of mankind in the aggregate, we shall see at every point of our investigation the operation of the progressive law. Consider the physical history of the race. During the earliest periods man was a savage, and man's life was little distinguished from the brute. His whole existence was an incessant struggle against the elements of Nature and the fury of wild beasts. At first his only food must have been fruits and roots; for he occupied the world a long while before he was competent to invent any weapon wherewith to destroy animals. His pillow was a stone, and his roof a tree or a cavern. From the day when he first made a flint implement, and the time when he discovered how to kindle fire, to the year when Birmingham and Sheffield manufactories and forges rose, and railways and telegraphs were universalized, there is one long record whose every page is marked by the gradual operation of the law of progress. Consider the course of legislation. The might of the strong was at first the only law. Before even the semblance of just laws rose into a system, countless ages, laden with injustice, passed away. Consider the history of re-

ligion. Generation after generation lived in the practice of gross superstitions before Jesus Christ came to propound our present religion, and it has taken upward of eighteen hundred years for that system to establish itself even theoretically among certainly a small proportion of mankind. IL.

**Unobtrusive Life, The Energy of.**—Considered with reference to mass, the vegetable far exceeds the animal world on the face of the globe. The animal kingdom wants mass, and the motions of individuals withdraw them frequently from our sight, and we do not think of the energy which we do not see. Now the vegetable world works upon our imagination by the mere force of quantity. In the animal kingdom it is precisely that life that we are wont to designate as the smallest in point of room, which by its subdivision and rapid increase presents in reality the most remarkable relations in respect of mass. The smallest of the *Infusoria*, the *Monadidæ*, only attain a diameter of one three-thousandths of a line, yet do these silicious-shelled organisms, in moist countries, compose, by their accumulation, subterraneous strata several fathoms in thickness. In the same way there are tremendous forces at work in society, which the majority of mankind pass unheeded, because they are so occupied with gazing at the mere mass of accomplished facts which lies on the surface of observation. Underneath all this display and quantity of accomplished things there are innumerable individual influences in a state of energy and multiplication; and at the very basis of national life, yet unobtrusively, they so work as to affect the strata of society, altering the position of primeval landmarks, shaking old foundations, and changing the position of ancient institutions. K.

**Unrestrained Appetite Snares its Possessor.**—The man who will not restrain his strongest appetite will find that it will lead him into a ruinous snare. Observe the eagle. When gorged with food, the eagle dislikes the exertion of flying, and generally runs forward a few paces before taking to flight. The Scotch shepherds have discovered this propensity, and have invented a very ingenious trap, which is made so as to

take advantage of this habit. A circular inclosure is built of stone, about four feet in height, without any roof, and with a small door on one of its sides. A dead sheep is then thrown into the center of the inclosure, and a noose adjusted round the door. The eagle soon discerns the sheep, and after making a few circles in the air, alights upon the dead animal and feeds to his heart's content. After eating until he can eat no more, he thinks of moving, but as he does not choose to take the trouble of flying perpendicularly in so narrow a space, he prefers to walk out through the door, and is straightway strangled by the ready noose.

IL.

**Unscrupulous Money-Getter, The.**—The unscrupulous money-getter is not necessarily an able man. On the contrary, he often appears dull and stupid. But he is rapacious, cruel, and cunning, and he owes his success to these qualities. Notwithstanding the applause with which society greets his performances, they have much the same inspiration as those of the glutton. The glutton is thought but a dull animal, but his mode of catching deer shows much the same portion of intelligence as that which is exhibited by the money-getter, or by the Arctic fox when he arranges cods' heads as baits to catch crows. The glutton climbs into a tree in the neighborhood of a herd, carrying up with him a quantity of a kind of moss of which the deer are fond, and when he sees any one of the herd approaching, he lets a portion of the moss fall. If the deer stops to eat, the glutton instantly descends on its back, and torments it by tearing out its eyes and other violence to such a degree that, either to get rid of its enemy, or to put an end to its sufferings, it beats its head against the trees till it falls down dead; for when the glutton has once fixed himself by his claws and teeth, it is impossible to dislodge him. After killing the deer he divides the flesh into convenient portions, and conceals them in the earth for future provision. In this he shows himself to be as prudential as the money-getter, who at the end of a nefarious financial success places his profits in various securities and the balance in his bank for future use.

R.

**Unscrupulous Depredators.**—The white-headed eagle (*Haliaëtus leucocephalus*) of the United States is an emblem of those unscrupulous politicians, lawyers, brokers, and adventurers who live by robbing other men of the legitimate results of their labors. In obtaining for food a supply of fresh fish, this eagle exhibits all their rapacity and cunning. He does his fishing by proxy. Perching on the bough of a tree, or on some other elevated position on the coast, he watches the manœuvres of one of his near relations, the smaller and less powerful osprey or fish-hawk (*Pandion haliaëtus*). As soon as he sees the osprey dash down into the waetrs and emerge again with his prey struggling in his talons, the white-headed eagle quits his post of observation and darts off in pursuit of the successful fisher. The latter, encumbered with his prey, is quite unable to contend in flight with his pursuer, who endeavors to rise above him; and the manœuvres of the birds in this struggle for the upper hand are exceedingly energetic and crafty. The conclusion of the affair is, however, nearly always the same. The eagle, being quite unencumbered, generally overcomes the osprey; the latter lets his prey drop with a scream of disgust; and the piratical pursuer then descends with astonishing rapidity, and usually manages to secure the booty before it reaches the water. MU.

**Unseen Powers, Great Resources in.**—The Kalihari has its sirocco during the excessive drought which precedes the rainy season; a burning wind traverses this desert from north to south, and during its three or four days' duration it withers and dries up everything in its path. It is so loaded with electricity that a bundle of ostrich feathers, which remained exposed to it for a few seconds, was itself charged, as if it had been in contact with a powerful electrical machine, and produced a lively disturbance, accompanied by cracking noises, when taken in the hand. As often as this wind prevails, the electricity of the atmosphere is so abundant that every movement of the natives causes sparks to be given off their karosses, or cloaks made of the skin of beasts. D.

**Unsuspected Church Enemies.**—The ravages committed without our immediate observation by the ship-worm (*Teredo navalis*) are almost incredible. Wood of every description is devoured by it. When the teredos have taken entire possession of a piece of timber, they destroy it so completely that if the shelly lining were removed from the wood, and each weighed separately, the mineral substance would equal the vegetable in weight. The ship-worm has been the cause of numerous wrecks, for it silently and unsuspectedly reduces the plankings and timbers to such a state of fragility that when struck by the side of a vessel, or even by an ordinary boat, large fragments will be broken off. A pier has been known to be so stealthily sapped by these submarine miners that its unsound state, which might have endangered a hundred lives, was only discovered by an accident. The insidious, effective, and dangerous way in which this *Teredo navalis* performs its work reminds us of the proceedings of such persons, in congregational and other churches, as are very much addicted to the habit of calling themselves “poor worms.” These “poor worms” are always the beings who destroy the structures which good and noble men have made. They fasten themselves upon a gospel ship and burrow about it for their own benefit in all directions. Very often their presence is not even suspected, for they do not alter the external appearance of things. But as soon as any ecclesiastical tempest blows, or the ship touches any sunken local rocks, the extent of the operations of the “poor worms” is awfully apparent, for there is a shipwreck as the result of them. Many a Christian minister has been horrified by the discovery, just before a storm, that even his vestry contains “poor worms,” who weigh at a church meeting as much as all the wise men—a fact which he had never for a moment been led to suspect.

H.

**Unwariness, The Penalty of.**—Flamingoes are very shy and timid birds, and shun all attempts of man to approach them; the vicinity of animals, however, they disregard. Any one who is acquainted with this fact can take advantage of it

so as to effect the slaughter of these beautiful animals by dressing himself up in the skin of a horse or an ox. Thus disguised, the sportsman may get close to them and shoot them down at his ease. So long as their enemy is invisible they still remain immovable, the noise of the gun only stupefying them, so that they refuse to leave, although their companions are dropping down dead around them. They are taken in by appearances, and so long as the man is disguised they accept him as the creature which he pretends to be, even though his actions clearly indicate that he is something else. Shy, beautiful, and harmless, the unfortunate bird meets destruction simply for want of wariness. Many a lovely human being with the like qualities has met her doom for want of that same trait. RE.

**Use is Second Nature.**—In speaking of the cause of “the indescribable, deep, and quite peculiar impression which the first earthquake which we experience makes upon us,” Humboldt says: “The impression here is not, I believe, the consequence of any recollection of destructive catastrophes presented to our imagination by narratives of historical events; what seizes upon us so wonderfully is the disabuse of that innate faith in the fixity of the solid and surest foundations of the earth. From early childhood we are habituated to the contrast between the mobile element water and the immobility of the soil on which we stand. All the evidences of our senses have confirmed this belief. But when suddenly the ground begins to rock beneath us, the feeling of an unknown, mysterious power in Nature coming into action and shaking the solid globe arises in the mind. The illusion of the whole of our earlier life is annihilated in an instant. We are undeceived as to the repose of Nature; we feel ourselves transported to the realm, and made subject to the empire, of destructive unknown powers. Every sound—the slightest rustle in the air—sets attention on the stretch. We no longer trust the earth upon which we stand. The unusual in the phenomenon throws the same anxious unrest and alarm over the lower animals. Swine and dogs are particularly affected by it; and the very crocodiles of the Orinoco,



otherwise as dumb as our little lizards, leave the shaken bed of the stream and run bellowing into the woods. To men the earthquake presents itself as an all-pervading, unlimited something. We can remove from an active crater; from the stream of lava which is pouring down our dwelling we can escape; with the earthquake we feel that whithersoever we fly we are still over the hearth of destruction. Such a mental condition, though evoked in our very innermost nature, is not, however, of long duration. When a series of slighter shocks occur in a district one after another, every trace of alarm soon vanishes among the inhabitants. On the rainless coasts of Peru nothing is known of hail, nor of explosions of lightning and rolling thunder in the bosom of the atmosphere. The subterraneous noise that accompanies the earthquake there comes in lieu of the thunder of the clouds. Use and wont for a series of years, and the very prevalent opinion that dangerous earthquakes are only to be apprehended two or three times in the course of a century, led the inhabitants of Lima scarcely to think more of a slight shock of earthquake than is thought of a hailstorm in the temperate zone.

K.

**Useful the Most Plentiful, The Most.**—Such things as diamonds, which are not essential to man, are not plentiful in the earth; but water, air, and light are everywhere. Among the metals certainly the most useful is the most abundant. The author of "*Siluria*" says, that in reviewing the facts respecting the origin and age of the various metals most useful to man, he is led to believe that iron is the oldest as well as by far the most diffused in Nature. In fact, it occurs plentifully in the most ancient of all known aqueous deposits, the Laurentian rocks, and has continued to be abundant throughout all the strata up to the formation of the bog-ore of the present day.

SI.

**Uses of Unadmired Things, The Hidden.**—If we do not at once see the use of a thing which is unbeautiful, we are apt to disdain it altogether. Utility or beauty we demand as a characteristic of everything. But let it be constantly remem-

bered that our limited vision and knowledge often prevent our discerning the uses which exist in things. Do not be deceived by the mere appearance. The sandy deserts which one might have been inclined to consider as mere encumbrances on the earth are of high importance in creating winds. They send off vast streams of hot air into the higher regions of the atmosphere, and hence the cooler air off the coasts is sucked away in an opposite direction. The deserts, indeed, may be regarded as vast suction-pumps providentially placed at certain stations on the earth, to create useful winds and help the transport of moisture to lands that are in want of it. But for the Thibetan deserts there would have been no southwest monsoon; and without the monsoon the fertile plains of Hindostan would have been a waste of sand.

BE.

**Using One to Catch Another.**—The story of the monkey which used the paw of the cat to draw the roasting chestnuts from the fire has enabled the word "cat's-paw" to maintain a place in our dictionaries. For we need some equivalent to designate a proceeding which we often see in life closely resembling the monkey's trick. The same thing may be also illustrated in another way. Commerson relates that in the Mozambique a species of remora is employed to catch turtles. A ring with a long cord attached to it is fixed on the tail of the fish, which is carried out to sea in a bucketful of salt water. As soon as a turtle is perceived asleep on the surface, the fishermen paddle toward it very gently, until they come sufficiently near, when they throw out the remora, which makes for the dormant turtle with speed, and fastens on it so strongly that both can be drawn to the boat and secured. Happy is the man who has never seen a friend used by a designing knave in his fishing for power and money in very much this kind of way!

MU.

**Valency, Political.**—The power of one atom to attract to itself and to combine with a definite number of other atoms, and no more, is called its valency; and according to the number which is the limit of its power, it is called bivalent or tri-

valent, or tetravalent. In like manner, the power, in the parliamentary world, of one man to attract other political units to himself, and to cause them to combine with him for various purposes, depends upon his political valency. Without this valency society would have to depend upon some other cohesive forces. The strongest political man is he who has most political valency; and he is an agitator, a caucus-monger, or a prime minister according to the strength of his endowment. The power of some units of society, as of some atoms, to attract others to them in firm combination is remarkable in the highest degree, and inexplicable. DU.

**Value, Intrinsic and Extrinsic.**—Gold would, by general consent, be considered the most valuable metal. But then we must distinguish between substantial utility and adventitious value; and between intrinsic and extrinsic value, lest the word mislead us. For example, whatever may be the utility of gold and its market value, as a matter of fact iron is by far the more substantially and intrinsically valuable metal. It is the very ladder on which the arts and trades have mounted to their present height. It is the only metal which is not injurious to the health, the only metal which forms a never-failing constituent of the body, especially the blood. Now gold is found on the very surface of the earth, and it is only necessary to free it from earthy admixtures to obtain it in a pure metallic state. It seems presented to men by Nature as a gift. But iron, like knowledge, and everything in the world which possesses real intrinsic value, must be struggled for by the most laborious toil, by exertion both of the bodily and mental powers. The hard pursuit of an intrinsically valuable thing is often a blessing, while the easy obtainment of adventitious value is too often unattended by much benefit to the receiver. The inhabitants of countries who are arduously occupied in mining and working the iron have the blessings attendant on labor—health, contentment, prosperity, and intellectual culture—in a far greater degree than those of countries where gold abounds and industry is neglected. So the word “value” has, it is obvious, a very

large meaning; and we often require to discern between very different things before we simply prefix it to another word, lest we convey an erroneous impression. In our loose use of words we call many things valuable which are altogether valueless, and which, if a crucial moral test, instead of a conventional one, were applied, would be pronounced injurious. PR.

**Venal Politicians.**—The hydra—a genus of polyp—possesses some points of resemblance to the venal politician. The digestion of the hydra is so peculiar that not only can it absorb creatures of a far higher organization than itself, but it may actually be turned inside out without any derangement of its functions. The old inner surface in that case acts the part of a skin, while that which was the outer skin adapts itself without difficulty to the performance of the work of digestion. The venal politician possesses the power to destroy higher reputations than his own, and to turn them to his own advantage. He, too, can shift his principles inside out. The Republican surface takes the place of the Democratic surface when he so pleases; and he enjoys the capacity for appropriating political concerns to his own advantage, whatever specious surface he may exhibit for the time being to the outside world. N. H.

**Venomous Disposition, The.**—There are plants which may be said to distil venom of their own accord. The manchineel-tree, for example (by no means uncommon in the West India Islands), affords a milky fluid, which blisters the skin as if it were burned with a hot iron; and indeed so dangerous has the vegetable been accounted, that if a traveler should sleep under its shade it was once popularly believed he would never wake again. The venomous disposition of these plants has its representative in the human family. There are persons to be met with who are so spiteful as to cause pain the moment you come into contact with them. Their lips distil malice, and it seems the object of their life to inflict malignant wounds. If you trust them, your happiness will sleep the sleep of death. PO.

**Verbiage.**—The fecundity of the queen bee is amazing; yet it is surpassed by that of the termite ant. She contains about

three inches by half an inch of eggs, and lays them at the rate of sixty a minute. Just as these small creatures are prolific of eggs, so are small minds prolific of words. Eagles' eggs are scarce. So are thinkers' words. Termite eggs and fools' verbiage are plentiful enough.

B. W.

**Vice, The Modus Operandi of.**—The honey-moth and the honeycomb-moth attack bees, and more cunningly than the sphinx-moth, as well as more successfully. They are so small that they can get into the hive sometimes, notwithstanding the vigilance of the guards, and deposit their eggs in the combs. These little moths, called *galeria* moths, are small and of a light-brown color, and can run with great rapidity. When they are at rest, or when running, their wide wings are folded over the body into a very small space indeed, and offer no impediment to the movements of their feet. It is, indeed, necessary that some provision of this nature should be made, for when one of them has succeeded in slipping past the sentinels, there is a grand commotion in the hive, each bee chasing the *galeria* moth and endeavoring to secure it with its teeth, when its fate would be instant death at the jaws of the infuriated multitude. But generally the active little creature, having once obtained an entrance, fulfils the object for which it came there; for after running and doubling and twisting about among the combs, it evades its enemies and secretes itself in some crevice, where it deposits its eggs in safety. The object of its life is now accomplished, and it cares little what becomes of itself afterward. As for the hive, the mischief is done, for the eggs are sure to be hatched, and successive colonies of these destructive little creatures are soon found, some of whom rush out of the door to carry destruction into other hives, while others, finding themselves in the midst of plenty, lay their eggs in the same hive where they themselves were born. After all this labor and perseverance what a strange place this seems for a mother to choose, and what a *chevaux de frise*, as it were, of stings all about her pretty ones! It matters not, however, to them, as she well knows. The larva, once successfully hatched, rapidly

covers itself with silk, which the bees cannot destroy nor penetrate with their stings for the destruction of the noxious intruder. Gradually this silken covering becomes a tube or covered way, stretching in any direction that the larva pleases right through the combs. When this enemy becomes numerous it is all over with the hive; the bees have no choice but to desert the place altogether and construct a new habitation. The movements of these galeria moths suggest an analogy to the insidious operations of vice in the moral world. Like these moths, vice is shrewd of selecting a home, audacious in its method of entering it, and active in its plans for eluding pursuit. It has a horrible power of self-propagation, and by a sad irony of fate it constantly happens that the very people who hate it most intensely are often the unwilling victims who have to support it and its progeny. Nor does the resemblance end here, for as the larvæ of the galeria moth sometimes bring absolute ruin upon the industrious hive which their progenitors shamefully invaded, so do the children of vice bring down to undeserved destruction the happy fabric in which they have scandalously reared themselves at the expense of unconsenting sufferers. In its relation to society, vice, like this moth, is a shameless invader, an unscrupulous inhabitant, and a ruthless destroyer.

B. W.

**Vice, The Fecundity of.**—The fer-de-lance of the West Indies, a much-dreaded serpent, is, when adult, about five or six feet long. The number of young produced by this deadly species of reptile at one birth is immense, being seldom less than fifty. At the moment of birth these young ones are completely formed, very nimble, and ready to bite, if irritated. In its poisonousness, and in its fecundity, this serpent resembles human vice. One immoral idea will bring forth a horrible progeny of others, all of which, from the moment of their birth, are ready to do injury.

MU.

**Vice Giving Warning of its Approach.**—There are evils which give warning of their coming. Drunkenness does not seize upon a man suddenly. It gives warnings often and many.

Avarice, and a number of other vices, can be detected long before we are within their reach. There are infallible indications by which we may be warned. The approach of vice is like the approach of the rattlesnake. This horrible reptile, one of the most venomous of serpents, warns man involuntarily against its formidable presence. At the end of its tail there is placed a rattle, which consists of a string of hollow, dry, and semi-transparent bones, which constantly clatter against each other as the reptile moves, with a hoarse, dull, echoing sound. The bony rings increase in number with the reptile's age, and it gains an additional one, it is said, at each casting of the skin. The warning which it is thus compelled to give of its approach enables those who hear to escape an awful death. Happy are those men whose ears are open to the warnings which social monsters, far more horrid than even the rattlesnake, in like manner invariably give of their presence and movements, and, profiting thereby, manage to escape !

D.

**Vice, An Allegory of Virtue Triumphant over.**—St. George triumphing over the dragon is not prettier in conception than the secretary-bird vanquishing the snake is in fact. The latter incident makes a good allegory of virtue triumphing over vice. The reptile, when attacked by the secretary-bird, suddenly stops and rears itself up, swelling its neck, and showing anger by shrill hissing. At this instant, says Le Vaillant, the bird of prey, spreading one of his wings, holds it in front of him, and covers both his legs as well as the lower part of his body with it as if with a buckler. The reptile makes a spring at his enemy ; the bird makes a bound, and spurning the serpent with his wing, retreats again, jumping about in every direction in a mode which, to a spectator, appears highly grotesque. He soon returns to the combat, ever presenting to the venomous teeth of his adversary nothing but the end of his well-protected wing, and while the other is fruitlessly expending its poison by biting the callous feathers, the bird is inflicting vigorous blows with his other wing. At last the reptile, stunned and wavering, rolls at full length in the dust ; the bird then cleverly

catches hold of it and throws it several times up into the air, until the victim, becoming exhausted and powerless, the bird crushes its skull with his sharp-pointed bill. The serpent is then swallowed whole by its conqueror, unless it is too big, in which case it is first torn in pieces. RE.

**Vicious Ideas, The Insidious Victory of.**—How surprised sometimes is the naturalist, who, after carefully preserving a chrysalis, and awaiting day by day the appearance of the beautiful butterfly, of which it is the coarse and mysterious envelope, sees a crowd of flies emerge in place of it! This is through the work of the *Echinomyia*, a genus of insects which derive their nourishment from flowers. They deposit their eggs on caterpillars, and the young larvæ on hatching penetrate their bodies and feed on their viscera. How surprised sometimes is the kind father of a family, who, after carefully watching the growth of a child, and anticipating the development of a noble character, sees to his dismay an exhibition of all the gross and common vices instead of it! This is the work of various bad associates, such as servants, tutors, or others who, while deriving their livelihood from tending children, have deposited in their minds—perhaps unintentionally, but nevertheless effectually—vicious ideas which have only waited the opportunity for a horrible unfolding. The victory of these vicious ideas is so insidious that forethought is disarmed. The embryo is placed where even ingenuity might search in vain. When those ideas develop they are as certain to destroy a beautiful character as the *Echinomyia* are to destroy the most lovely butterfly. 1.

**Vicissitudes of Human Life, The.**—The Asiatic steppes alternately assume the most discordant aspects. Periodical transformations are especially remarkable in the steppes of the Black Sea, the Sea of Azov, and the Caspian Sea. In winter the heavy rains inundate them, and transform them into impracticable marshes; spring clothes them with a thick carpet of grasses and other herbaceous plants, so that they reveal to the eye leagues upon leagues of delightful sward cropped by numerous flocks. In summer they undergo a third metamor-



phosis, and are converted into parched and sun-scathed deserts like those of Nubia or Arabia. In our own life we experience vicissitudes analogous to these. We have, as Shakespeare says, "the winter of our discontent;" then we may have a sort of spring-time experience when hope promises days of plenty crowned with future joys. It may also be that, when the time comes which we expected to prove a kind of summer in our existence, we find our anticipations parched into desert-like disappointment by the fierce light of Reality. Like the steppes, we are subject to strange vicissitudes.

D.

**Vigilance, The Necessity for.**—Perhaps at the very moment when we deem ourselves most secure, we are most in danger. A sleeping passion, or a foe in ambush, may be ready to break out upon us and work our ruin. The birds do not see the fox at hand when he is going to play his most dangerous trick, for then he lies, extended as if dead, and eyes the birds on the hedges and trees, and, if they come within his reach, pounces upon them and kills them. "Let him who thinketh he standeth take heed."

R.

**Violent in the Serene, The.**—The sea, as a rule, is tranquil. Yet what awful power it possesses when it is aroused to fury! Blocks of stone weighing over thirteen tons have been known to be hurled by it a distance of more than thirty feet, and blocks of three tons to more than one hundred yards. Jetties and bridges are dashed about like toys. The entire harbor of Fécamp was destroyed by its rage, and the mass of earth torn from the north side of Cape la Hève was estimated at more than three hundred thousand square yards. Yet these are only among the trifling achievements of the sea when it passes from its peaceful to its furious mood. Violence often slumbers under an appearance of serenity. A crowd of joyous holiday-makers to-day may become to-morrow a foaming mob of insurrectionists!

I. O.

**Violent Elements, The Safe Conduction of.**—The electric fluid will not leave its center to enter a bad conductor if it can find a good one. On this simple principle depends the

utility of the lightning-rod. In its flight toward the earth the lightning avoids a bad conductor, and selects a good one if it is to be had; hence it will spare the house or the tower so long as there is sufficient iron rod attached through which it may descend to the earth. In this way the electric discharge, which would have shattered the bad-conducting tower, glides easily and safely past it into the ground. In dealing with any violent elements the same principle should guide us; we should arrange not to oppose them, for that is useless, but to conduct them away harmlessly. The spirit of a starving mob would often strike down valuable institutions, but it may be diverted into the paths of hopeful industry, in which it will expend all its fire. The appetites of a people may threaten to run riot in the temples of drunkenness and debauchery; but if they are conducted into the pure atmosphere of wholesome amusement and recreation, they will spend themselves as harmlessly as the lightning spends itself on the greensward when the genial showers conduct it thither. "The quality of mercy," which "droppeth as the gentle dew from heaven," is the best conductor of all violent social elements.

BE.

**Virtue may Exist where least Expected, A.**—In the most unlikely places we may discover an unexpected virtue. On the low rocks, on the summits of all the loftiest Highland hills, there is a curious leafy lichen (*Parmelia fahlunensis*) found abundantly, scorched by the sun apparently into a black cinder. Of all lichens, this species, judging from its outward color and appearance, would seem to be the least capable of yielding coloring matter; and yet, when treated in the ordinary way, it yields a brilliant pink, cherry, or claret color, which in France has been applied to so many useful purposes that the lichen in consequence has obtained the common name of "Herpette des Tenturiers."

FO.

**Virulence of a Venomous Nature, The.**—The natives of South Africa designate the striking echidna, a singularly formidable viper, the picakolou. These reptiles possess so abundant and deadly a venom that when one of them is attacked by

a band of dogs, the first dog bitten dies immediately ; the second, five minutes afterward ; the third, at the end of an hour ; and the fourth, after a more or less lengthened agony. A great number of beasts is annually destroyed by the picakolous ; the fangs of one killed at Kolobeng distilled poison for several hours after its head had been severed from its body.

D.

**Vitality, Dormant.**—The eggs of birds and seeds of plants do not possess all the characters of a living being, and yet they live. Once place them in conditions favorable for the development of their existence, and they become transformed into animals or plants. Such bodies are regarded as collections of organic matter possessing dormant vital properties, which, under certain circumstances, waken up and become active. There are in our libraries, and in human minds, ideas in a condition which bears an analogy to this state. They are full of vitality, but dormant. But there are conditions under which they will develop into a tremendous existence.

OU.

**Voices, Silent.**—We may say of the stars, that though there is neither speech nor language, their voices are heard ; “their sound is gone out into all lands, and their words unto the ends of the earth.” Though placed at inconceivable distances from our earth, stars are yet near enough to contribute to the happiness and safety of mankind. During the sun’s absence they bestow an illumination which, though feeble, is highly useful. When the moon has forsaken the long polar night, they cast a dim twilight over the snow. In the deserts of the East, stars have served to guide the traveler since those ancient days when astronomy began to be cultivated on the plains of Chaldea. The pilots of antiquity learned to steer by the stars before the lodestone was discovered ; and in these days of science, sun, moon, and stars may be said to cover the firmament with lamps and sign-posts. Familiarity with the fact has long dulled within us the feeling of surprise ; still it is a wonderful thing to think that in the most lonely spots of the trackless ocean the position of a ship can be told with accuracy by questioning the aspects

of the heavenly bodies. Silently, too, they tell us of distances, magnitudes, and velocities, which transcend our power to conceive. With mute argument stars prove to us that in those far-off regions gravitation—the power that brings the apple to the ground—still reigns supreme, and with winning whispers of probability they persuade us that, like our own bountiful sun, they also bathe attendant worlds in floods of brightest light, deck them in colors of beauty, and shower countless blessings on myriads of beings.

BE.

**Voluptuous, The Destiny of the.**—Destiny deals with voluptuaries as the *Dionæa muscipula* of South America deals with the flies. The leaves of this plant, which are spread out on the soil near the roots, are composed of two parts—the one elongated, which may be considered as a sort of petiole, the other larger and broader, and nearly circular, formed like two trap-nets, which are united at the base by a nervure, fashioned like a hinge, and furnished round the edge with rough hairy cells. In the upper surface these plates are furnished with certain small glands, whence exudes a viscous liquid which attracts the insects. If a fly lights on this singular apparatus, the trap raises itself quickly by means of its long hinge. They approach and it closes, rapidly crossing its long cilia, and the insect is a prisoner. The efforts of the fly to escape increase the irritability of the plant, whose fangs only open when the movements of the animal have ceased with its life. In every age there are voluptuous people who are attracted by that which promises mere pleasure to the senses, and they pursue it, reckless of all danger. They light upon it as these flies do on this singular plant, despite the warnings of experience. But the tree of destiny is inexorable, and it kills them as a consequence of their actions. To move is useless; escape is hopeless.

v.

**Voracity, Competitive.**—The voracity for riches, which is one distinguishing trait of nineteenth-century civilization, is well illustrated by the *Hydræ*, a genus of polyp. These *Hydræ* are, exceedingly voracious, and feed only on living animals. Some-

times two polyps will seize upon the same worm, when a dispute, of course, ensues, which occasionally ends in a very singular manner. If the weaker of the two does not feel inclined to let slip a booty for which he has, perhaps, been waiting with extended tentacles for several days, it sometimes happens that each polyp swallows the end which has fallen to his share, until at length the worm, being all gone, the mouths of the pair come into actual contact. They now find themselves in a position of considerable difficulty, which is sometimes terminated by the breaking of the worm; but if this does not take place, the larger or stronger of the two seizes upon his antagonist, and swallows him worm and all. Who has not seen an analogous proceeding in commercial circles, where fortune-hunters, liquidators, joint-stock-company promoters, and their class, are always endeavoring, as they describe it, to "best" one another in reference to spoil for which they contend? It is observable, too, that the competitor who, for the time, may be successful in amalgamating the whole of his neighbor's riches, does not always succeed in extinguishing his neighbor. The man disappears from the commercial circle for a time, but he reappears "after many days" to wage another war for wealth. Marvelous to relate, the swallowed polyp also survives the results of competitive voracity, and after a time he emerges uninjured from his living tomb. The worm, however, like the unsuccessful man's riches, is gone! The successful polyp has appropriated the mere worm, but cannot the rival. Our greedy enemies may extinguish us for a time and appropriate our wealth, but our manhood will survive.

N. D.

**Vulgarity, The Type of.**—Of all the Babel confusion of bird-tongues, there are few more displeasing than the sparrow's. All the boorish vulgarity of his nature is expressed in that tone. It is true, to the sparrow himself it sounds like music. He never tires of repeating again and again his shrill chirrup, although no one cries *da capo*; and to the despair of all lovers of harmony, makes himself heard loudest just when one of his race, endued with the gift of song, is about to rejoice the lis-

tener. But so it is; the only true nobility, that of genius, is what the plebeian always hates most. Sparrow, and nothing but sparrow, such is the leveling system of these *sansculottes*.

ST.

**War, The Proprieties of.**—The mischief which the European termites silently accomplish is wonderful. Some records kept in a box at La Rochelle, which was invaded by these terrible destroyers, were almost totally destroyed, and that without the slightest external trace of any damage. The termites had reached the boxes in which these documents were preserved by mining the wainscoting; they had then leisurely devoured the administration records, carefully respecting the upper sheets and the margin of each leaf, so that a box which was only a mass of rubbish seemed to contain a pile of papers in perfect order. This fastidious decorum of theirs, in leaving the outward appearance of things in good order, resembles that of English soldiers after one of their wars of foreign aggression. They invade a locality by some side pretense, commit the most awful destruction in all directions, and yet leave their treaties, compacts, and even protocols, which cover all these transactions, in the most perfect order. The form of these things remains intact, while the substance of them has been rendered mere rubbish. Yet such a procedure looks delicate, and prettily considerate, and forms part of the proprieties of the conventional Christian warrior—a despot exceedingly particular about the semblance of things.

H.

**War Orators.**—We have a class of speakers in this country who are silent on all great social and cosmopolitan topics, but make themselves heard and felt the moment any matter of war-like fascination comes to the surface. All other questions float down the stream of public opinion without causing them even to indicate their existence. But let a question involving blood appear, and with marvelous celerity all these pugilistic men come from the obscurity of barracks and service clubs, and from no one knows where, often fuming about no one knows what.

They remind one of those animals noted for their blood-thirstiness in the warm regions of Africa—the caribitos (*Serrasalmo*). Their haunts are at the bottom of rivers, but a few drops of blood suffice to bring them by thousands to the surface; and Humboldt himself mentions that in some part of the Apure, where the water was perfectly clear and no fish were visible, he could in a few minutes bring together a cloud of caribitos by casting in some bits of flesh. With equal ease we can collect all our war orators if we only give them one sanguinary pretext.

MU.

**Warriors the Followers of Insects.**—When the “workers” of the genus *Eciton* (a species of foraging-ants) are abroad upon a foraging expedition, they spread out their columns, climbing over every leaf, plant, shrub, and tree, putting the whole animal as well as insect world into commotion and alarm. All apterous insects, particularly *Blattidæ* and spiders, are preyed upon. At other times a community of ecitons engage in a regular attack upon a nest of some peaceful and industrious species of *Formica*. The ecitons crowd into the nests of the ants, each seizing upon a helpless victim, and carry or drag it out of the nest; if the ant prove too heavy for a single eciton to carry, it is ruthlessly torn into pieces, two or more assisting in the operation. The march is then commenced back to the nest of the eciton, the living ants and the mangled remains of others being probably carried there for the purpose of feeding the young brood of the marauders. In studying these creatures, and their methods and depredations, the conclusion seems forced upon us that they must have been invaluable as examples to warriors, and to those scientific gentlemen of bloodthirsty tastes who carefully elaborate statistical treatises on methods of attack, in which, with the greatest nicety, there are given calculations, showing how the greatest plunder can be taken from the enemy with the least injury to the invader and with the most ruinous results to the enemy. And really the question is not easily disposed of if we ask, Whether men show more genius than in-

sects in their warfare? In what do the foraging expeditions of armies differ from those of these ants, except in magnitude of suffering? MU.

**Wasteful Epicure, The.**—The food of the otter consists entirely of fishes. It furnishes itself with a supply much greater than it can consume, infecting the edges of the lake with quantities of dead fish, of which, with the characteristic epicurism of the family, it eats only a mouthful or two of the best parts. But in winter, when the lakes are frozen over, and the rivers pour with a rapid torrent, the otter is often greatly distressed for provisions, and is then obliged to live upon grass, weeds, and even the bark of trees. Yet even from starvation it never learns the lessons of thrift or forethought. It is like those wasteful servants and heedless spongers who are ever ready to be extravagant and reckless when they have any opportunity, even though a future of penury and distress is sure to follow their imprudent conduct. They are greedy epicures, who pander to their own excesses, indifferent to all economy or prudence. *Carpe diem* is their only motto. A.

**Way, Where there is a Will there is a.**—The materials which the bird uses to build its nest are generally of the rudest kind. The instruments are very imperfect. The bird has neither the squirrel's hand nor the beaver's tooth. Having only his bill and his foot (which by no means serves the purpose of a hand), it seems that the nest should be to him an insoluble problem. The tool really used is the bird's own body—his breast—with which he presses and kneads the materials until he has rendered them completely pliable, has thoroughly mixed them, and subdued them to the general work. Within, too, the implement which determines the circular form of the nest is no other than the bird's own body. By constantly turning about and ramming the walls on every side, he succeeds in shaping the circle. Thus, then, his house is his very person, his form, and his immediate effort, perhaps his suffering. The result is only obtained by a constantly repeated pressure of his breast. There is not one of these blades of grass but which, to take and



retain the form of a curve, has been a thousand and a thousand times pressed against his bosom, his heart, certainly with much disturbance of the respiration, perhaps with much palpitation. "Where there is a will there is a way." Only bad workmen, who have no strong desire to accomplish their task, ever desert it for the want of tools. T. B.

**Weak, The Courage of the.**—Although the gazelles are generally considered extremely timid animals, which, moreover, their weakness would fully justify, they display on emergency a surprising courage. When they cannot escape from danger through agility, they bravely confront the enemy which attacks them. Menaced by a panther or a leopard, they form themselves into a circle, which, bristling everywhere with keen-pointed horns, compels the antagonist to retreat. D.

**Weak Natures, The Low Means of Defense of.**—The second English snake is the common harmless ringed snake, which does not bite, because it has no teeth to speak of, and does not poison people, because it has no venom at all. Its only mode of defense is by pouring forth a most unpleasant, pungent odor, which adheres to the hands or clothes so pertinaciously that many washings are required before it is expelled. Yet it is sparing enough even of this solitary weapon, and may after a while be handled without any inconvenience. C. O.

**Woman, The Self-Satisfied.**—The dear lady full of maxims, little prim notions, wise saws, proverbs, and nursery lore, with her consequential, self-satisfied mien—how often we have seen her! We have heard her called in derision "the dear old hen." And really, derision apart, there is some resemblance between this queen and that feathered one. The hen reared in the confined, strict notions of her class, never forgets for a moment the limits nor the duties of her station. Her sober mind abhors all innovation and extravagance. She will have nothing to do with those doubtful virtues which we proudly call elegance, refinement, high breeding, or which we at once sum up in the term "polite education." The fantastical rockings,

the buoyant soaring in mid-air, the art of song and nest-building, which the world admires in other birds, are to her as nought. As her ancestors were before her will she remain; and like her dress, so in thought and deed is she plain and citizen-like. "Stay at home and get an honest livelihood!" is what she exclaims to her sons and daughters, amid whom she walks with a high sense of her importance. She tells them of her own peaceful existence, of her young and her old days; and flinging a precept to one and a caress to another, she nods her well-frizzled top-knot with discreet gravity. ST.

✓ **Workers, Great Power in Little.**—The strength of invertebrate animals is, relatively speaking, immense. Many persons have observed how out of proportion the jump of a flea is to its size. A flea is not more than an eighth of an inch in length, and it jumps a yard; in proportion, a lion ought to jump two thirds of a mile. Pliny shows in his "Natural History" that the weights carried by ants appear exceedingly great when they are compared with the size of the <sup>ants</sup> indefatigable-laborers. The strength of <sup>ants</sup> these insects is still more striking when one considers the edifices they are able to construct. Man is proud of his works; but what are they, after all, in comparison with those of the ant, taking the relative heights into consideration? The termite or white ant constructs habitations many yards in height, which are so firmly and solidly built that the buffaloes are able to mount them and use them as observatories; they are made of particles of wood joined together by a gummy substance, and are able to resist even the force of a hurricane. The largest pyramid in Egypt is only one hundred and forty-six yards high—that is, about ninety times the average height of man; whereas the nests of the termites are a thousand times the height of the insect which constructs them. Their habitations are thus twelve times higher than the largest specimen of architecture raised by human hands. We men are, therefore, far beneath these little insects so far as strength and the spirit of working go. Let us contemplate their work and renew our labors. I.

**World, The Changes of the.**—"The fashion of the world passeth away." On every hand we see the law of mutation at work. Governments, systems of thought, our own bodies, our cities, and even the seaboard of our coasts, bear testimony to the fact that there is no such thing in this world as permanence of form. To the mind that longs to ground itself upon something that is immutable, it seems not only paradoxical, but even an appalling fact, that the only certain law in the physical world is the law of change. Yet so it is, and so it appears to have ever been. Geological facts concerning our world convince us that it began its career as an incandescent mass of molten matter; that it passed through a period of refrigeration; that, as a consequence of that process, and of the attendant and necessary chemical combinations and changes, a solid crust was slowly evolved; that the elaboration of oceans and continents in the forms in which we now behold them has been the work of periods of time so vast that it is impossible for the most powerful imagination to describe or even to conceive of them; and that yet, notwithstanding all these stupendous phases, there are at the present moment alterations still everywhere going on which in their intrinsic importance are, and in their future consequences will be, as momentous as the phenomena by which they have been preceded. Not only does the surface of our globe undergo entire and perpetual changes, but, as a necessary consequence, all the forms of vegetable and animal life are merely transient phenomena. With one exception, all the old tenants of this place have left it, and all their near kindred have gone too. In digging in and exploring the rocks and shores around Lyme-Regis in Dorsetshire, England, we get some glimpses of what they were like, and of the life they must have led when, in the morning of the world, they hungered and thirsted, and roamed about to maintain their existence, as poor human beings anxiously do to-day. There was the *ichthyosaurus*, a huge marine lizard. This carnivorous reptile often measured from twenty to thirty feet long. It had a head like a crocodile, the *vertebræ* of a fish, and for its locomotion the paddles of a

whale. There was the plesiosaurus. This creature somewhat resembled the ichthyosaurus. It had a lizard's head, though it was smaller, and its neck, which was like a snake's, was very long; for propelling power it had a strong tail, and its four paddles were even larger than those of the ichthyosaurus. There was the pterodactyle. This curiously constructed creature, probably the first of the winged creation, very much resembled an enormous bat, and possessed a bird's head, neck, and tail. It had five fingers provided with wings, and could fly like a bat. With its wings it could either fly or swim, with its feet it could walk, with its claws it could climb, and thus with hands, wings, or feet it pursued its way. Then with these creatures there were the iguanodon, the nautilus, the ammonite, marvelous mollusks, gigantic cuttle-fishes, and many more. With the exception of the nautilus, which appears to be a persistent type, these forms of existence have vanished from the world. In examining the strata of other parts of the globe, whether for vegetable or animal fossils, a like result will be reached. We shall evermore be confronted with the fact that there is nothing stationary in Nature; everything is in a state of perpetual change. We can trace some few processes, we can discover some few causes and effects, but what is to be the grand climax of the ever-changing drama is a problem beyond the reach of saint or sage. The universe is obviously the manifestation of a mighty will in constant action. If the past history of our world may be taken as a basis for an argument respecting the future intentions of that will, we may well believe that all present phenomena, including the human race, will pass away as completely as the sauroids of the lias. Man's egotism has prompted him to believe that the human being is the great end and object of creation, but geology suggests that, like other denizens of this globe, the human race is only here in order to prepare the way for nobler successors. There is no excuse for the assumption that, in the construction of such a creature as man, the Marvelous Creative Will exhausted all its powers of invention, and came to the end of its resources. GE.

**World the Expression of one Thought, The.**—To one who has never studied the mechanism of a watch, its mainspring or the balance-wheel is a mere piece of metal. He may have looked at the face of the watch, and while he admires the motion of its hands, and the time it keeps or the tune it plays, he may have wondered in idle amazement as to the character of the machinery which is concealed within. Take it to pieces and show him each part separately: he will recognize neither design nor adaptation nor relation between them; but put them together, set them to work, point out the offices of each spring, wheel, and cog, explain their movements, and then show him the result; now he perceives that it is all *one* design; that, notwithstanding the number of parts, their diverse forms and various offices, and the agents concerned, the whole piece is of *one* thought, the expression of *one* idea. He now perceives that when the mainspring was fashioned and tempered, its relation to all the other parts must have been considered; that the cogs on this wheel are cut and regulated—*adapted*—to the ratchets on that, etc., and his conclusion will be that such a piece of mechanism could not have been produced by chance; the adaptation of the parts is such as to show it to be according to design, and obedient to the will of *one* intelligence. So, too, when one looks out upon the face of this beautiful world, he may admire the lovely scene; but his admiration can never grow into adoration unless he will take the trouble to look behind and study, in some of its details at least, the exquisite system of machinery by which such beautiful results are accomplished. To him who does this, the sea, with its physical geography, becomes as the mainspring of a watch; its waters, and its currents, and its salts, and its inhabitants, with their adaptations, as balance-wheels, cogs and pinions, and jewels. Thus he perceives that they too are according to design, that they are the expression of one thought, a unity with harmonies which One Intelligence, and One Intelligence alone, could utter. T.

**Worldly Wisdom, An Enigma Concerning.**—Birds possess worldly wisdom. Not only does the swallow in Europe

know that the insect which fails him there awaits him elsewhere, and goes in quest of it, traveling upon the meridian, but in the same latitude, and under the same climates, the lorist of the United States understands that the cherry is ripe in France, and departs without hesitation to gather his harvest of fruit. In the midst of the ocean, the weary bird which reposes for a night on the vessel's mast, beguiled afar from his route by this moving asylum, recovers it, nevertheless, without difficulty. So complete is his sympathy with the globe, so exactly does he know the true realm of light, that on the following morning he commits himself to the breeze without hesitation. He chooses without other path than the vessel's track the exact course which will lead him whither he wishes to go. There, not as upon land, exists no landmark, no guide; the currents of the atmosphere alone, in sympathy with those of water—perhaps, also, some invisible magnetic currents—pilot this hardy voyager. But it is not only in respect of their shrewd journeyings that birds indicate their possession of worldly wisdom; they also manifest it in all matters relating to their residences. A close observation reveals the fact that the nests of birds differ according to climate and the weather. At New York the Baltimore makes a closely fitted nest to shelter him from the cold. At New Orleans his nest is left with a free passage for the air to diminish the heat. The Canadian partridges, which in winter cover themselves with a kind of small pent-roof at Compiègne, under a milder sky do away with this protection, because they judge it to be useless. The same discernment prevails in relation to the seasons. The American spring in the opening years of the present century, occurring very late, the woodpecker (of Wilson) wisely made his nest two weeks later. We might multiply instances to show the wisdom which they display, but it would be quite unnecessary, because the foregoing facts are sufficient to illustrate it. In reflecting upon the whole question, one is surprised at the disparity which there is between innate worldly wisdom in birds and men. The bird knows where

to go, and what to do, in order to make its existence pleasant. Man does not seem to manage nearly so well, and his efforts are constantly attended with defeat and misery. If, after protracted experience, he does succeed in obtaining the material comforts which the bird gets without any purchased experience, he is congratulated on being a clever man. It would seem that, in those exceptional cases where men have acquired worldly advantage very easily, they have been endowed by Nature with worldly wisdom in the way in which the birds have been endowed with it. There is no more credit due to them than there is to the birds. Both equally are indebted to Nature for guiding them to prosperous journeys and suitable habitations. But why have all the birds been so well endowed with the gift of worldly wisdom, and why have so few men? There is an enigma. The answer may be that the development of men's faculties is the object intended to be attained by the arrangement. Who can say?

T. B.: ST.

**World's Gradation, The.**—Interpret the various systems of geology in any way whatever, it still is clear that they all do present a long series of mineral mutations, and of vital gradation and progress. Not progress from imperfection to perfection, but from humbler to more highly organized orders, as if the great design of Nature had been to ascend from the simpler conception of materialism to the higher aims of mechanical combination; from mechanism to the subtler elimination of mind; and from mentalism to the still nobler attribute of moralism, as developed alone in the intellect and soul of man. From the lowly seaweeds of the silurian strata and marsh-plants of the old red sandstone, we rise (speaking in general terms) to the prolific club-mosses, reeds, ferns, and gigantic endogens of the coal-measures; from these to the palms, cycads, and pines of the oölite; and from these again to the exogens or true timber-trees of the tertiary and current eras. So also in the animal kingdom: the graptolites and trilobites of the silurian seas are succeeded by the higher crustacea and bone-clad fishes of

the old red sandstone; these by the sauroid fishes of the coal-measures; the sauroid fishes by the gigantic saurians and reptiles of the oölite; the reptiles of the oölite by the huge mammalia of the tertiary epoch; and these in time give place to existing species, with man as the crowning form of created existence—man, whose mental and social history is one of constant progress. This idea of gradation implies not only an onward change among the rock materials of the earth, but also, as plants and animals are influenced in their forms and distributions by external causes—new phases and arrangements of vitality—the creation of new species, and the dropping out of others from the great scheme of animated Nature. “Through the shadow of the globe we sweep into this younger day.” AD.

**Wounded, Attacking the.**—Caprice, habit, or inclination permits some men to attack even the depressed, dejected, and wounded in spirit. What more abominable spectacle is there than that of a man attacking his less fortunate fellow? Such a person is like the chimachima (*Milvago chimachima*), a species of *Falconidæ* which attacks beasts of burden upon which it perceives wounds or sores; these it tears with its bill until the unfortunate victim is forced to roll himself upon the ground to get rid of his tormentor. We judge this to be cruel; but the other sight is still worse. MU.

**Wrong Place, Effects of the Best Thing in the.**—The best thing, if put into the wrong place, may often have most dangerous effects. We all know the deadly results of a serpent's sting. But Oliver Goldsmith, in a very interesting way, suggests that the injury resulting from the serpent's wound is not merely owing to the poison, but also to the mode and place. And he puts it that even milk, which is the most mild and nourishing of all fluids, and the most friendly to the human constitution, would, if injected into a vein, quickly become fatal, and act with even more certain destruction than the venom of the viper. If this be so, we cannot well contemplate this pestilent action of the milk without being impressed with the fact



that we ought not to be satisfied merely with the possession of a good thing. If we desire to derive good results, we must also be careful that it is properly used; and further, in order to prevent positively pernicious effects, we must not even allow it to be applied otherwise than in the right method. We do not always attend to this. For instance, religion in any country is its greatest blessing; but when "the sincere milk of the Word" is not taken by the population in a proper and natural manner, but is projected into the national system by state force, the body politic resents such an intrusion, and the very thing which would have been a boon under other circumstances then becomes a source of acute irritation to many of the members, and of actual injury to all.

A.

**Young Life, Artlessness of.**—When the young of the ostrich are hatched, they are familiar, and follow the first person they meet. At first they are extremely harmless and simple; but as they grow older they become more cunning and distrustful, and run so swiftly that a greyhound can scarcely overtake them.

A.

**Young Life, The Need for.**—The need the world has of young life is very obvious. The nation of the future rests upon the cradles of to-day. The young life in any institution is that which repairs its defects, enlarges its usefulness, and stimulates its charities. The young life in any family is the influence which suns the path of age, invigorates exertion, and quickens the growth of the virtues. Where would the valor and vigor of the country be if deprived of the support of young life? Disraeli says that almost everything that is great has been done by youth; and the history of heroes is the history of youth. In the vegetable world the mission and influence of the young life is not less plain than powerful. According to Louis Figuier, the bud must be considered as a fundamental element in the plant, which, without it, would soon perish. It is the bud which year by year repairs the losses, supplies the flowers, the leaves, the branches which have disappeared. Through its means the

plant increases in growth. Through it its existence is prolonged. The bud is the true *renovator* of the vegetable world. Therefore these buds are everywhere—on the roots, the leaves, and sometimes even on the flowers; for Nature never loses sight of the phenomena essential to organic life, namely, the production of new beings.

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REFERRED TO IN THE VOLUME, AND EXPLANATION OF  
THE ABBREVIATIONS USED TO INDICATE THEM.

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- AD.      Advanced Text-book of Geology. By David Page, LL.D.
- AG.      Agassiz's Siluria.
- A. P.    Animals and Plants under Domestication. By Charles Darwin,  
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### B.

- B.        Bible Teachings in Nature.
- BE.      Benedicite. By Chaplin Child, M.D.
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- B. T.    Bruce's Travels.
- B. W.    Bees. By Rev. J. G. Wood.

### C.

- C.        Common Objects of the Sea-shore. By J. G. Wood, M.A.
- C. B.    Cruise of the *Betsy*. By Hugh Miller.
- CH.      Chambers's Miscellany.
- C. O.    Common Objects of the Country.
- C. S.    Common Shells of the Sea-shore.
- CU.      Curiosities of Natural History, 3d series. By Frank Buckland.

### D.

- D.        Desert World. By Arthur Mangin.
- DE Q.    De Quincey's Sketches (Paper on Wordsworth's Poetry).
- DI.      Diamonds and Precious Stones.
- DU.      Unity of Nature. By the Duke of Argyll.
- DX.      Dixon's Ornamental and Domestic Poultry.

### E.

- E.        Elements of Geology. By Sir Charles Lyell, Bart.
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 HA. Handbook of Natural Philosophy. By Dr. Lardner.  
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 H. R. Historical Review, 1859. Pro. Soc., 164.

## I.

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 I. L. Influence of Light.  
 IN. Insects Injurious to Vegetation. By William Thaddeus Harris,  
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 I. Insect World.  
 I. O. Intellectual Observer, vol. ii., vol. iii.

## J.

- J. Journal of a Naturalist.  
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 By Matthew Gregory Lewis, M.P.  
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- Q. Quarterly Review Article on Higher and Lower Animals, October,  
 1869.

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